# Forest stakeholder attitudes and values: an annotated bibliography

T.M. Beckley, P.C. Boxall, L.K. Just, and A.M. Wellstead

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# FOREST STAKEHOLDER ATTITUDES AND VALUES: AN ANNOTATED BIBLIOGRAPHY

*T.M. Beckley, P.C. Boxall, L.K. Just,[1] A.M. Wellstead*

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## ABSTRACT

Understanding differences in stakeholder values is a critical first step in reducing conflict over natural resource management issues. Assessing and integrating stakeholder values into forest management and policy is a stated priority of most federal and provincial government agencies responsible for Canada's forests. The Natural Resources Canada document *The 1998–2003 National Forest Strategy* outlines several strategic directions for future action in forest management and policy. Some of these relate to specific stakeholder groups, such as industry and Aboriginal people. Other strategic directions relate to the local or national general public. Several disciplines within the social sciences have made significant contributions toward understanding various stakeholders motivations, aspirations, preference and values related to forest resources. This annotated bibliography summarizes some of these contributions, as well as some of the literature on mechanisms for incorporating stakeholders and stakeholders' values in forest policy and management processes.

## RÉSUMÉ

La compréhension des différences de valeurs entre intervenants est une première étape cruciale dans l'atténuation des conflits en ce qui concerne la gestion des ressources naturelles. La plupart des organismes gouvernementaux provinciaux et fédéraux responsables des forêts canadiennes se sont donné comme priorité d'évaluer et d'intégrer les valeurs des participants dans la politique et l'aménagement forestiers. Le document de Ressources naturelles Canada intitulé La Stratégie nationale sur les forêts (1998–2003) expose plusieurs orientations stratégiques en vue de guider la politique et l'aménagement futurs des forêts. Quelques-unes de ces orientations concernent certains groupes d'intervenants comme le secteur privé et les Autochtones. D'autres sont liées à la population locale ou à l'ensemble de la population canadienne. Plusieurs disciplines des sciences sociales ont apporté des contributions importantes en vue de faire comprendre, en ce qui concerne les ressources forestières quelles sont les motivations, les aspirations, les préférences et les valeurs des divers partenaires. La présente bibliographie annotée résume certaines de ces contributions et un peu de documentation sur les mécanismes d'intégration des partenaires ainsi que leurs valeurs dans les processus d'aménagement forestier et d'établissement de politiques à cet égard.

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# INTRODUCTION

The social sciences include established disciplines as varied as economics, political science, anthropology, psychology, and sociology. The social science umbrella also covers hybrid disciplines such as social psychology or context-specific areas of research such as human dimensions of wildlife or recreation research. All these disciplines have made significant contributions to our understanding of forest stakeholders. Stakeholders' motivations, aspirations, attitudes toward forests and preferences, and values of stakeholders for forest resources are critical data for forest managers and policy makers. Better data on these subjects will increase the probability of better decisions being taken.

Society comprises a diverse set of groups, organizations, and institutions. Some attitudes and values are commonly held within a given society while others are contentious. Both attitudes and values change over time, and these changes alter individuals' preferences for goods and services, and in the current context, the stream of diverse benefits that individuals desire from the forest. The social sciences have developed various tools for measuring, assessing and monitoring stakeholder attitudes, values and preferences. Data resulting from these methods can help decision makers in natural resource policy development or in natural resource management to accurately gauge the range of sentiment and degree of strong feelings on particular issues. Such data are also useful for tracking broad changes or trends, such as the increase in environmental awareness and concern that has been widely documented in the last three decades.

Resource managers and policy makers need to keep abreast of changing attitudes and values. They need to know who supports and who opposes given policies or management prescriptions. They need to know how different groups are effected by policy change, and how those impacts can effect subsequent changes in stakeholder attitudes and values.

*The 1998–2003 National Forest Strategy*[1] outlines nine strategic directions. The National Strategy itself is a compilation of many of Canada's forest stakeholders' values. Many of the strategic directions highlight the perspectives of specific stakeholder groups, such as Strategic Direction Four—"The Forest Industry: A Global Competitor," and Strategic Direction Seven—"Aboriginal People: Issues of Relationship." Other strategic directions deal with issues that affect specific forest stakeholder groups. For example, Strategic Direction Five relates to the forest research community, Strategic Direction Eight relates to private woodlot owners, and Strategic Direction Six relates to forest industry dependent communities and forest sector workers. Finally, Strategic Direction Three—"Public Participation: Many Voices," recognizes the legitimacy of all Canadians to provide input to discussions of forest policy and management. Social science tools can be extremely useful in helping those many voices to articulate their perspectives and preferences. As well, some social science methods quantify values in ways that allow researchers, policy makers, and managers to make meaningful comparisons of value differences among specific groups.

This annotated bibliography covers three related subjects. First, it reviews articles in the social science literature that deal with stakeholder definitions. Secondly, it summarizes articles that describe a broad array of mechanisms for incorporating stakeholders' attitudes and values into policy, planning, and management. Most readers are familiar with direct methods for stakeholder values assessments, such as public meetings, open houses, focus groups, and public hearings. Social science methods for assessing values and attitudes can be conceptualized as complementary, alternatives mechanisms to direct methods for gathering stakeholder input into forest management. The third focus of this annotated bibliography comprises reviews of social science research that assesses, measures and monitors stakeholders' attitudes and values. This review focuses primarily on research from the disciplines of sociology, economics, and political science because these represent the primary expertise of the authors. The bibliography is therefore not meant to be exhaustive, but rather is intended to highlight past research and insight from the social sciences that could inform present and future forest policy and management in Canada. For a more detailed discussion of the literature reviewed herein, *see* Beckley et al. (1999).[2]

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[1] *See* http://www.nrcan.gc.ca/cfs/nfs/strateg/control_e.html for a copy of the National Forest Strategy.

[2] Beckley, T.M.; Boxall, P.C.; Just, L.K.; Wellstead, A.M. 1999. Forest stakeholder attitudes and values: selected social science contributions. Nat. Resourc. Can., Can. For. Serv., North. For. Cent., Edmonton, Alberta. Inf. Rep. NOR-X-362.

**Abubakar, M.; Lord, W. 1992. Persistent conflicts over timber production and watershed management: a problem analysis. Water Resour. Bull. 28(5):845–852.**

Most forest lands are managed for multiple purposes such as timber production and water supply. Conflicts often arise in such cases because logging is perceived as a threat to water quality. These conflicts can result from uncertain factual information, differences in underlying social values, or imbalances in the incidents of costs and benefits. Conflict can go unresolved because existing institutional structures fail to address the real roots of the dispute. Fundamental value differences are critical underlying factors in natural resource disputes. Despite this, attention is often focused on factual issues. The authors suggest that a more useful approach to resolving long-standing disputes in the management of forested watersheds would involve identifying the root causes of these disputes and choosing options that directly address those causes.

**Adamowicz, W.L. 1992. Nontimber values in Canadian forests: an assessment of uses, techniques and data availability. Dep. Rural Econ., Univ. Alberta, Edmonton, Alberta. Proj. Rep. 92-02.**

This article reviews the major valuation techniques for nontimber services, namely contingent valuation, travel cost, and hedonic prices. The limitations of each are discussed. The most prevalent problem of these models is inability to measure nonuse values. The third aspect of this report is its examination of the gaps in nontimber value databases across Canada.

**Adamowicz, W.L.; Beckley, T.; Hatton-MacDonald, D.; Just, L.; Luckert, M.; Murray, E.; Phillips, W.E. 1998. In search of forest resource values of indigenous peoples: are non-market valuation techniques applicable? Soc. Nat. Resour. 11:51–66.**

This paper presents an interdisciplinary model that combines economic, sociological, psychological, and anthropological theory in the application of nonmarket valuation techniques to indigenous peoples. The first section presents a model of natural-resource values that centers on the relationship between held and assigned values. Then, the nonmarket valuation approach of contingent valuation is discussed. The third and forth sections examine the differences between indigenous and nonindigenous values toward natural resources and the difficulties that researchers face. The key problems are found in the analysis in understanding the nonmarket valuation of indigenous peoples, the lack of substitutability between goods, different property rights, satiation (how utility is derived from the accumulation of consumed goods and services), individual versus group sovereignty, and other characteristic differences such as gender, generation, and other demographic effects on values. The final section examines the problem in aggregating indigenous measures of social welfare. Despite the challenges of Aboriginal valuation of natural resources, the authors argue that an interdisciplinary approach is the most-effective research method.

**Adamowicz, W.L.; Boxall, P.C.; Williams, M.; Louviere, J. 1998. Stated preference approaches for measuring passive use values: choice experiments and contingent valuation. Am. J. Agric. Econ. 80(1):64–75.**

The authors apply two nontimber valuation methods: choice experiments (CE), which involve choosing between cases that are described by attributes; and contingent valuation (CV—both linear and quadratic), which asks people to choose between a case and specific alternative. The case study used to compare these two models was the level of willingness to preserve endangered Woodland Caribou habitat in Alberta. A random sample of 900 Edmonton residents were mailed a survey in which they were asked their preference for numbers of Woodland Caribou, the amount of wilderness area required, forest industry employment, and the amount of additional taxes they are willing to pay for the preservation. The analysis revealed that the CE approach provided a richer description of preferences over environmental attributes, and in some cases is a superior alternative to CV in some cases.

**Adamowicz, W.L.; Louviere, J.; Williams, M. 1994. Combining stated and revealed preference methods for valuing environmental amenities. J. Environ. Econ. Manage. 26:271–292.**

The authors use actual trip behavior with some hypothetical trip behavior gathered from surveys to assess the economic value of environmental quality changes for water-based recreation in Alberta. The results suggest that the combined modeling approach provides a richer analysis of recreational preferences.

**Adamowicz, W.L.; Swait, J.; Boxall, P.C.; Louviere, J.; Williams, M. 1997. Perceptions versus objective measures of environmental quality in combined revealed and stated preference models of environmental valuation. J. Environ. Econ. Manage. 32(1):65–84.**

This paper incorporates actual and hypothetical recreational site choice behavior to examine the differences among objective measures of environmental quality made by a government agency and recreationists' perceptions of these measures. The results suggest that substantial differences in economic models and performance result when these different measures are used. While perceptions of environmental quality are theoretically the appropriate measures to include in analyses, they are difficult and expensive to obtain.

**Albrecht, D.; Bultena, G.; Hoiberg, E.; Nowak, P. 1982. The new environmental paradigm scale. J. Environ. Educ. 13:39–43.**

The authors of this study test the reliability, validity, and unidimensionality of the New Environmental Paradigm (NEP) scale, and conclude that the scale has sufficient reliability to warrant its further use. They argue that the scale seems to be a valid measure of the values and beliefs it purports to measure. In addition, the scale was found to be multidimensional. The 12 items measured three distinct attitudinal domains, which were termed by this study as "balance of nature" "limits to growth", and "man over nature." Each subscale was found to be reliable. This is significant because it was found that persons of certain populations sometimes endorse one dimension while rejecting another within the NEP. Thus, the three domains are not necessarily related.

**Arrow, K.J.; Solow, R.; Portnoy, P.R.; Leamer, E.E.; Radner, R.; Schuman; H. 1993. Report of the NOAA Panel on contingent valuation. Fed. Regist. 58:4601–4614.**

The National Oceanic and Atmospheric Administration (NOAA) panel, chaired by Kenneth Arrow, a prominent American economist, was commissioned to consider contingent valuation as a policy procedure for assessing damages to or destruction of natural resources resulting from a discharge of oil. The panel found that existence and other nonmarket values should be considered in environmental economic analyses. These should be measured in addition to more direct and measurable economic activities. The first section examines criticisms of the contingent valuation method. Its detractors claim that it is inconsistent with the tenets of rational choice. Section two highlights the different approaches to designing CV surveys. The last three sections examine the development of guidelines for more-effective CV techniques.

**Beckley, T.M. 1996. Pluralism by default: community power in a paper mill town. For. Sci. 42(1):35–45.**

This work examines the local power structure in a timber-dependent community in Maine. The historical evolution of that power structure is closely related to the evolution of the pulp and paper industry in this community. Extensive personal interviews with local mill workers, loggers, community leaders, and others were primary data sources used in the analysis.

**Beckley, T.M.; Korber, D. 1996. Clear cuts, conflict and co-management: experiments in consensus forest management in northwest Saskatchewan. Nat. Resour. Can., Can. For. Serv., North. For. Cent., Edmonton, Alberta. Inf. Rep. NOR-X-349.**

Recent expansion of the forest industry in northwest Saskatchewan has had both economic and social effects upon the region. This region is characterized by a large Aboriginal population, and the forest management license agreement (FMLA) holder in the region is attempting to involve Aboriginal residents in the FMLA in forest management and planning. This report provides a midterm evaluation of progress. As well, the authors examine the

extent of public participation in forest management decision-making by creating an evaluation framework based on Evelyn Pinkerton's seven resource management functions. The authors find that the local public has primarily an advisory role with respect to resource management on the FMLA. Most decision-making power is still held by government and industry.

**Beckley, T.M.; Sprenger, A. 1995. Social, cultural, and political dimensions of forest-dependence: the communities of the Lower Winnipeg Basin, Brandon, Manitoba. Rural Dev. Inst. Ser. 1995-1.**

This report examines various aspects of forest-dependence in four communities in southeastern Manitoba. The communities include a company-owned pulp and paper mill town, a local service center, a First Nations community, and an historically French-Canadian community. The authors categorize the communities by type and degree of dependence. Both quantitative and qualitative methods are used. The authors also explore the historic legacy of forest-dependence, and how that dependence has shaped social, cultural, and political life in these communities.

**Bengston, D. 1994. Changing forest values and ecosystem management. Soc. Nat. Resour. 7(6):515–533.**

This article asserts that society is currently in a period of rapid and significant change in forest values. Some have charged that managing forests in ways that are responsive to changes in forest values is the main challenge faced by public forest managers. Bengston examines the nature of forest values and discusses whether all forest values are one-dimensional and commensurate and therefore comparable, or whether they are multidimensional and incommensurate. He examines the specific values involved and discusses the structure and relation of forest values in larger value systems. Bengston provides a brief review of how forest values have changed over time and discusses what these changes imply for ecosystem management approaches.

**Bengston, D.; Xu, Z. 1995. Changing national forest values: a content analysis. U.S. Dep. Agric., For. Serv., North Central For. Exp. Stn., St. Paul, Minnesota. Res. Pap. NC-323.**

This report attempts to measure empirically the evolution of forest values from a multiple-use, sustainable-yield paradigm to ecological management from 1982 to 1993. The authors use content analysis to determine the extent of change in three study populations: the general public, forestry professionals, and environmentalists. Content analysis is a research method for making inference from text by systematically identifying and analyzing specified characteristics within a set of texts. This method was applied to 2000 newspaper stories; the text of session papers presented at the Society of American Foresters National Convention, and the complete text of articles in the *Journal of Forestry* for forestry professionals; and a scan of articles from the publications of three major forest-related environmental groups. Forest values were classified into four categories: economic/utilitarian, life support, aesthetic, and moral/spiritual. Logit analysis was applied to examine data from the content analysis to determine the differences in the four forest values over time. The authors found that although there is a shift in values, the public shared similar economic/utilitarian and moral values with forest professionals, but shared more aesthetic values with environmentalists.

**Bishop, R. 1987. Uncertainty and resource valuation: theoretical principles for empirical research. Pages 36–44 *in* G. Peterson and C. Sorg, eds. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Gen. Tech. Rep. RM-148.**

Bishop argues that empirical research on resource values should apply the concept of option price instead of option value. Additional basic research on the magnitude of option value might have large implications for benefit-cost analysis using market values.

**Booth, D. 1994. Aboriginal view of nature and old growth forests. *In* Valuing nature: the decline and preservation of old growth forests. Rowman and Littlefield Publ., Inc. London, England.**

This chapter claims that when Native peoples use the forest there is only a moderate alteration in the forest ecology. It is unclear whether the author feels that contemporary Aboriginal values toward nature have changed from the past or have remained the same. He

claims that, historically, Aboriginal people went beyond materialism in their valuation of nature. Because Aboriginal people treated the natural world with respect, they might have exercised restraint in their use of its resources.

**Bostedt, G.; Mattsson, L. 1996. Confrontation or compromise? Determining appropriate institutions for environmental conflict resolution. J. For. Econ. 2(2):131–146.**

This article discusses and distinguishes between two types of institutions used in conflict resolution: adversarial and cooperative. The most appropriate type of institution for resolving conflict is chosen based on the notion of the production possibility frontier (PPF) (commonly used in economics). The first section is a case-study comparison of Sweden, where cooperative institutions predominate, and the United States, where confrontation is the norm (but with openness to direct public participation). The crucial issue, according to Bostedt and Mattsson, is the sensitivity of environmental goods to changes in timber production. In an area where timber and environmental interests are compatible (a concave PPF), a cooperative institution should be applied. In an area prone to land specialization, the authors suggest an adversarial solution is more desirable.

**Bourke, L.; Luloff, A.E. 1994. Attitudes toward the management of non-industrial private forest land. Soc. Nat. Resour. 7(5):445–457.**

The authors assert that forest management on both public and private lands in the U.S. has been widely criticized. Such criticism stems, in part, from the widely held belief that owners and managers of nonindustrial private forests (NIPFs) have a vested economic interest that is not shared by the general public. As a result, previous studies of NIPF management have assumed that landowners differ from the general public and hold utilitarian-oriented values toward the natural environment. Data collected in Pennsylvania, a state with one of the largest areas of NIPFs, challenge this commonly held belief. This article presents evidence of common concerns held by NIPF landowners and the general public with respect to their attitudes toward forests and forest-management policies. These findings reveal that sociodemographic characteristics, forest use, and ownership status have little influence on attitudes toward management.

**Boxall, P.C.; Adamowicz, W.L.; Swait, J.; Williams, M.; Louviere, J.J. 1996. A comparison of stated preference methods for valuing environmental goods. Ecol. Econ. 18:243–253.**

This paper presents an empirical comparison of contingent valuation (CVM) and choice experiments. Both of these methods require individuals to state their preferences for environmental qualities; however, choice experiments differ from CVMs in that environmental attributes are varied in an experimental design that requires respondents to make repeated choices among bundles of attributes. The empiricai application involved the effect of environmental quality changes related to forest-management practices on recreational moose-hunting values. Significant differences were found between the values derived from the two methods; however, respondents might have ignored substitute recreation areas in the CVM question. By restricting the choice experiment model to consider only the one site where quality was varied, economic values were similar to the CVM model. These findings highlight the importance of substitutes in environmental valuation.

**Boxall, P.C.; Englin, J.; Adamowicz, W.L. 1998. Valuing undiscovered attributes: a combined revealed-stated preference analysis of North American Aboriginal artifacts. Paper presented at the First World Congress of Environmental and Resource Economists, June 25–27, 1998, Venice, Italy.**

This paper examines the result of discovery of new attributes in recreation site choice models using joint revealed-stated preference. The empirical application involved the discovery of Aboriginal rock paintings along wilderness canoe routes in eastern Manitoba. A 4-year study of wilderness recreation trips included a stated preference experiment in which canoeists were asked if they would change their site choices in response to the presence of two types of rock paintings: a pristine painting and another spoiled by human vandals. The resulting stated site preferences (with new attributes) were combined with the revealed site preferences (without the attributes) in the econometric analysis. The results suggest that preferences over the SP and RP models were not statistically

different. Welfare measures for the presence of pristine paintings range from $4.79 to $6.81 per trip, and are about 12–13 times greater than those for vandalized paintings. This study forecasts the demand to see the paintings. This information is useful in designing tourism programs to see rock art or forest access plans to reduce the probability of discoverying culturally sensitive areas.

**Boxall, P.C.; McFarlane, B.L.; Gartrell, M. 1996. An aggregate travel cost approach to valuing forest recreation at managed sites. For. Chron. 72(6):615–621.**

This study shows that with little effort and some planning, fee collection permit systems can be used in concert with travel cost and geographic information systems to provide estimates of some nontimber values in Canada's forests. In this case, travel cost models were used to estimate the value of camping trips to designated recreation areas in the Rocky-Clearwater Forest in Alberta during 1994. Trips were aggregated by postal code and resulting trip counts from each postal code were used in truncated Poisson and negative binomial regressions. The study involved the redesign of a camping fee collection permit that allowed a census of users, rather than a sample, to be used in the analysis. Per-trip consumer surplus estimates resulting from the Poisson model revealed that aggregate nonmarket benefits provided by the Alberta Land and Forest Service Forest Recreation Areas were about $750,000 in 1994.

**Boxall, P.C.; Watson, D.O.; Englin, J. 1996. Backcountry recreationists' valuation of forest and part management features in wilderness parks of the western Canadian Shield. Can. J. For. Res. 26(6):982–990.**

The economic value of four forest ecosystems, fire-damaged forests, cutblocks, and several park management features was estimated for backcountry recreationists, primarily canoeists, in Nopiming Provincial Park in eastern Manitoba. The analysis, conducted using the travel-cost, random-utility model, revealed that the forest ecosystems associated with jack pine and white spruce were valued by recreationists. On the other hand, the analysis predicts that recreationists would pay to avoid black spruce and aspen ecosystems, fire-damaged forests, portages, and cottages. The results provide weak statistical evidence that cutblocks that are not in the line of site of recreationists provide positive benefits. While park management variables play a role in determining recreation values, the ages and types of forests located at recreation sites are more important. These findings support a major role for fire in determining recreation economic benefit flows from forests in the Canadian Shield.

**Brody, H. 1982. Maps and dreams: Indians and the British Columbia frontier. Douglas and MacIntyre, Toronto, Ontario.**

This text documents the author's 18-month experience with Aboriginals in northeastern British Columbia. The work uses both quantitative and qualitative approaches to document the subsistence economy of this region. This research project was motivated by a proposed oil pipeline, a project that would have threatened the traditional way of life of the Beaver Indians. To describe this way of life, the author includes a number of maps documenting such activities as trapping, hunting, and berry picking. Also discussed are the detrimental effects of forestry and oil developments on this way of life.

**Brookshire, D.; Eubanks, L.; Sorg, C. 1987. Existence values and normative economics. Pages 14–26 *in* G. Peterson and C. Sorg, eds. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Gen. Tech. Rep. RM-148.**

This paper examines the philosophical bases of economic value, reviews the various definitions of existence value found in the literature, and discusses several issues important in clarifying these definitions. In addition, the authors suggest that individuals express a willingness to pay to preserve nature that cannot be interpreted strictly as an economic benefit in all cases.

**Brown, P.; Manfredo, M. 1987. Social values defined. Pages 12–23 *in* D. Decker and G. Goff, eds. Valuing wildlife: economic and social perspectives. Westview Press, Boulder, Colorado.**

This chapter attempts to identify and define the social values toward wildlife from among the many kinds and views of value. The distinction is made between held and assigned values.

The authors conclude that valuation of wildlife is at best rudimentary, and more effort should be devoted to identifying the wildlife resources that need to be valued and the reasons for such valuation. They argue that cultural, societal, psychological, and physiological values are important considerations in future investigations of wildlife values.

**Brown, T. 1984. The concept of value in resource allocation. Land Econ. 60(3):231–246.**

This paper examines the philosophical bases of economic value, reviews the appropriateness of monetary measures of value for resource allocation, and explores one aspect of the contextual nature of values. The distinction between held and assigned values is articulated in this piece. The value concepts relevant to the task of resource allocation are described as preference-related. The individual human is seen as the originator of preference, and therefore, of value. It is suggested that monetary values are often inappropriate as the sole value measures for public resource allocation.

**Brown, T.; Daniel, T. 1990. Scaling of ratings: concepts and methods. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Res. Pap. RM-293.**

Rating scales provide an efficient and widely used means of recording judgments. This paper reviews scaling issues within the context of a psychometric model of the rating process and describes several methods of scaling rating data. The scaling procedures include the simple mean, standardized values, scale values based on Thurstone's Law of Categorical Judgment, and regression-based values. The scaling methods are compared in terms of the assumptions they require about the rating process and the information they provide about the underlying psychological dimension being assessed.

**Brown, T.C., Daniel, T.C.; Schroeder, H.W.; Brink, G.E. 1990. Analysis of ratings: a guide to RMRATE. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Gen. Tech. Rep. RM-195.**

This report describes RMRATE, a computer program for analyzing rating judgments. RMRATE scales ratings using several scaling procedures, and compares the resulting scale values. The scaling procedures include the median and simple mean, standardized values, scale values based on Thurstone's Law of Categorical Judgment, and regression-based values. RMRATE also computes reliability statistics and analyzes the ratings using principal-component analysis techniques to assess variation among judges. RMRATE should be useful to practitioners needing to summarize or analyze rating data, and to researchers interested in comparing and evaluating alternative scaling methods.

**Brown, T.C.; Peterson, G.L.; Tonn, B.E. 1996. The values jury to aid natural resource decisions. Land Econ. 71(2):250–260.**

The authors of this paper suggest a novel alternative for including public values in natural-resource decisions. They recommend using a citizens' jury process (in contrast to expert panels) for assisting in decisions regarding environmental compensation and choices among management alternatives. They cite representativeness, objectiveness, and cost effectiveness as advantages of using juries. Among the disadvantages are small group size and the possibility that a jury might not be able to reach consensus.

**Burch, W. 1976. Who participates: a sociological interpretation of natural resource decisions. Nat. Resour. J. 16:41–54.**

In this article, Burch explores how societies and natural resources are interrelated. Public participation is viewed as a mechanism to ensure the survival of social stability. Burch discusses the social factors that make participation claims possible and the nature of those natural-resources decisions that are most-readily susceptible to increased participation. Burch concludes that western society treats resources as private, individual entities with hierarchical forms. Those who accept these forms as legitimate have a greater chance of participating in change. Also, many public-resource decisions focus on maintaining the status quo.

**Carroll, M.S. 1989. Taming the lumberjack revisited. Soc. Nat. Resour. 2:91–106.**

A temporal comparative study of loggers in the northwest United States is conducted by comparing the findings of Hayner's 1945 study and a series of interviews in 1989. Carroll finds that despite the many technological changes that have occurred within the sector, loggers in

1989 shared similar values to those interviewed in 1945. Both sets of loggers identified themselves with a larger occupational community with strong role identities that have withstood larger social changes.

**Carson, R.T.; Wright, J.; Alberini, A.; Carson, N.; Flores, N. 1994. A bibliography of contingent valuation studies and papers. Natural Resource Damage Assessment Inc., La Jolla, California.**

There are 1672 international sources provided in this extensive bibliography of contingent valuation. Both studies and papers are listed. This is a bibliography, with no supporting text or annotations.

**Chaiken, S.; Stangor, C. 1987. Attitudes and attitude change. Annu. Rev. Psychol. 38:575–630.**

Approaches to understanding fundamental issues of attitudes and motivational change are examined. The authors argue that cognition cannot be studied in isolation. The areas of research discussed include attitude structures, attitude-behavior relations, attitude change induced by persuasive messages, and minority and majority group influence. Group influence is advocated as an important but overlooked area of research.

**Clark, R.; Stankey, G. 1994. FEMAT: Social assessment: framework, key concepts, and lessons learned. J. For. 92(4):32–35.**

Current debates over forest management are social problems that involve conflict among public views and interests, institutional agendas, and power relationships. Forest-resource management concerns include loss of species biodiversity and the effects of environmental protection on forest-dependent rural communities and families. The Forest Ecosystem Management Assessment Team (FEMAT) undertook a social assessment of three identified crisis areas in the United States: forest-dependent rural communities; Native American values toward forest-system resources and management; and recreation, subsistence, and aesthetic values of forests. The authors conclude that distrust between stakeholders is a symptom of underlying problems; current information about diverse societal values is inadequate for policy development; special-interest groups cannot function as scientists; people will not support what they do not understand, and they cannot understand that which they are not involved in; and finally, the planning and decision-making processes must be fair, open, and inclusive.

**Cooper, J.; Croyle, R.T. 1984. Attitude and attitude change. Annu. Rev. Psych. 35:395–496.**

This is an older piece, but it is a very thorough review of the social–psychological literature on attitudes that was written when this was a popular topic. The authors review the vast literature on the relation between attitudes and behavior. They also explain and review work on the theory of cognitive dissonance.

**Cormick, G. 1992. Environmental conflict, community mobilization, and the "public good": linkages and contradictions. Studies Law Polit. Soc. 12:309–329.**

This article examines whether environmental conflicts (over the siting of facilities, or impacts on natural resources) are an effective vehicle for community mobilization. Participant observation was used to collect data. The impact of existing or alternative approaches to conflict resolution, and the extent to which the public good should be addressed in such conflicts, are treated. Cormick contends that environmental disputes might not lead to community empowerment, and could actually disempower poor or minority communities. Where there is debate over the public good, that debate often deals with priorities rather than absolutes. As self-interested justifications of positions are made, nonrepresented groups in the process may suffer.

**Cortner, H.; Shannon, M. 1993. Embedding public participation. J. For. 91(7):14–16.**

The authors of this piece, who have 20 years of experience with public participation in research planning, believe that the public should be viewed as capable of learning. Planning and policy development are evolutionary processes in which social participants can change positions as they understand and incorporate new knowledge. The authors disagree with overly structural interpretations of planning and policy processes that characterize social participants as well-defined, interest-holding stakeholder groups.

**Cowan, W.; Rounds, R. 1995. Economic benefit of forestry in eastern Manitoba and the Interlake. *In* The economic, social, political and cultural dimensions of forest-dependence in eastern Manitoba. Rural Dev. Inst., Brandon Univ., Brandon, Manitoba.**

This work analyzes the economic impact of the forest industry in eastern Manitoba and Manitoba's Interlake region. Forest-industry sector employees are identified and their incomes, terms of employment, and demographic characteristics are analyzed to determine the importance of forestry employment in their lives. Forest-products firms in the region are identified and described in terms of resources available, wood harvest levels, wood sales and purchases, and values added. The authors estimate the total annual value of the eastern Manitoba and Interlake region forest industry to be $65 million.

**Crabtree, B.; Miller, W. 1992. Doing qualitative research. Sage Publ., London, England.**

This book provides a comprehensive overview of qualitative-research methods, from design and data collection to interpretation and analysis. Emphasis is placed on the methods of participant observation and key informant interviews, as well as other approaches. Empirical works that use qualitative methods in health provision are provided as examples.

**Cramer, L.A.; Kennedy, J.J.; Krannich, R.S.; Quigley, T.M. 1993. Changing Forest Service values and the implications for land management decisions affecting resource-dependent communities. Rural Sociol. 58(3):475–491.**

Despite legislation that ties the United States Forest Service (USFS) to the goal of multiple-use forestry, the core values expressed by employees in the agency differ from one another. This internal heterogeneity of values leads to divergent policy directions within the USFS. Cramer et al. conducted a survey on all levels within the USFS, from senior foresters to line personnel. They found that line personnel, especially those new to the service, shared values more closely with the general public. This could be due to the fact that recent recruits are drawn from more diverse backgrounds than older, career employees. The authors not only document the shift in organizational values toward multiple-use forestry, but also discuss the implications of this change for rural communities dependent upon forest resources.

**Crowfoot, J.; Wondolleck, J. 1990. Environmental disputes: community involvement in conflict resolution. Island Press, Wasington, D.C.**

This book has several chapters that treat involvement of stakeholders in environmental disputes. The first chapter discusses how citizen organizations form, and how they effectively engage in conflict to gain the attention, resources, and influence they need in order to meet their goals. Three perspectives on environmental conflict and organizations are presented and discussed. Chapter 2 summarizes various decision-making and negotiation techniques used to resolve environmental conflicts. A case study examines the local opposition to the U.S. Forest Service's plan to harvest timber in the San Juan National Park and the resolution of conflict through the creation of an advisory council.

**Dale, A.; Lane, M. 1994. Strategic perspective analysis: a procedure for participatory and political social impact assessment. Soc. Nat. Resour. 7(3):253–267.**

There has been movement away from centralized, apolitical modes of decision-making and toward enhanced participation of parties affected by resource development. This trend has influenced planning and social impact assessment. These activities are increasingly viewed as socio-political processes. As planners and social impact assessment practitioners pay greater attention to local contexts rather than theoretical models, there will be more room for bargaining and negotiation among interest groups in planning and policy.

**Daniel, T.; Boster, R. 1976. Measuring landscape aesthetics: the scenic beauty estimation method. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Res. Pap. RM-167.**

This is an early work that advocates the incorporation of intangible values of public lands. Since this paper was written, great strides have been made in estimation of values for aesthetic and other nonmarket uses of natural resources. The paper deals explicitly with landscape beauty, which the authors

acknowledge to be challenging to define in an objective, scientific manner. The fact that such values are difficult to measure is not sufficient justification for their elimination from policy and management frameworks. The authors review some early approaches to evaluating scenic beauty.

**Dennis, S.; Zube, E.R. 1988. Voluntary association membership of outdoor recreationists: an exploratory study. Leisure Sci. 10:229–245.**

Research on the political activity of outdoor recreationists has focused primarily on their associational affiliations and concern for the environment. This article reviews literature on theories of collective behavior, recreation motivations, and environmental concern. The study considers outdoor recreation to be a social movement, and investigates relationships among incentives for voluntary membership in environmental and outdoor recreation associations. Members of associations were found to be significantly different than nonmembers on several variables, including value for outdoor recreation, incentives for association membership, intellectual motivations for outdoor recreation, environmental concern, education level, and age. Results suggest that association efforts to obtain instrumental benefits or public goods that accrue to all of society are a primary incentive for outdoor recreationists to join voluntary associations. A common thread of intellectual pursuit distinguished members from nonmembers, suggesting that intellectual benefits can help define the relationship between outdoor-recreation and associational-affiliation behaviors.

**Doering, R. 1995. Evaluating round table processes. National round table review, Winter, 1995. 1–3.**

A common institutional response to the cross-sectoral, cross-disciplinary, and cross-temporal challenges of sustainable development in Canada has been the advent of round tables. While they are not considered mature enough to be adequately judged, this article reviews what has been learned from the past experience. Doering offers his views on whether round-table consultations with stakeholders are worth the time, cost, and effort. He concludes that in Canada, even in light of the struggle to cope with economic and environmental crises, multi-stakeholder processes have been important experiments in policy-making and public administration. Their role is essentially transitional and catalytic; they support rather than replace elected bodies. Although they have significant flaws, and are generally marginal to core policy-making, Canadian round tables are modest and practical efforts to empower citizens to engage more directly in the decisions of their governments.

**Duinker, P.; Matakala, P.; Chege, F.; Bouthiller, L. 1994. Community forests in Canada: an overview. For. Chron. (70)6:711–720.**

This article provides basic definitions of a community, a forest, and a community forest. It examines the history of community forestry in Europe, mainly Finland and Sweden, and the United States. Two types of European community forests are identified: privately owned land on which the public has access to nontimber uses; and forests owned and managed by a municipality, city, or parish. While community forests are less common in the United States, county forests in New England, Minnesota, and Wisconsin, and the Menominee Indian Reservation of Wisconsin, are suggested as possible examples of community forests. The authors examine recent developments in community forestry in Canada on a province-by-province basis. They examine existing community forests, policy initiatives aimed at developing community forests, and research and development efforts into community forests. The final section addresses development issues of prospective forest communities, such as an adequate land base, well-defined property rights, and decision making that places high priority on public participation.

**Dunk, T. 1994. Talking about trees: environment and society in forest workers' culture. Can. Rev. Sociol. Anthropol. 31(1):14–34.**

This qualitative study examines forest workers in northwestern Ontario. Interview respondents were questioned with respect to their relationship to the environment and their perception of environmentalists. Data for the analysis are from ethnographic research and 45 open-ended personal interviews. Dunk found that although forest workers associated environmentalism with middle-class southerners, workers' understanding of the natural environment transcended narrow economic or utilitarian

views about the environment and natural resources.

**Dunlap, R.; Grieneeks, J.; Rokeach, M. 1983. Human values and pro-environmental behavior. Pages 145–168 *in* W.A. Conn, ed. Energy and material resources: attitudes, values and public policy. Westview Press, Boulder, Colorado.**

This study tests the hypothesis that individuals who are motivated by Maslow's higher order values are more likely to engage in pro-environmental behavior. When the expressed values of a sample of recylers were compared to those of a national sample, it was found that the recyclers emphasized higher-order values and de-emphasized lower-order ones. This pattern of difference remained (though somewhat reduced) even when the recyclers were compared to a matched subsample with similar demographic characteristics.

**Dunlap, R.; Van Liere, K. 1978. The new environmental paradigm. J. Environ. Educ. 9:10–19.**

This early work was one of the first to postulate the emergence of a new social paradigm with respect to the environment. The authors offer the New Environmental Paradigm (NEP) in contrast to the Dominant Social Paradigm (DSP). At the time of their writing, they considered the anthropocentric DSP to predominate, but they suggest that the significant population held a different core set of values with concerning environmental issues. They characterize proponents of the NEP as espousing ideas such as limits to growth, achieving a steady state economy, sustainability, and preserving the balance of nature. The NEP proponents reject the notion that nature exists for human exploitation. The paper develops a method to determine the extent to which NEP attitudes are prevalent among the general public. The authors use a Likert scale instrument to examine the degree to which NEP values were held by the general public of Washington State.

**Eberle, M.; Cook, K.; and McDaniels, T. 1992. Conflict resolution in forestry: recent initiatives. For. Can., Pac. Yukon Reg., Pac. For. Cent., Victoria, British Columbia. Can.-B.C. Agreement For. Resour. Dev. FRDA II.**

This report identifies and describes 15 forest-related land-use conflicts and resolutions in North America initiatives (Alberta, Alaska, Oregon, and Washington). The purpose of the study was to aid the British Columbia government in the search for new approaches to forest-land use decision making. Three different categories of initiatives were identified: mediation, negotiation efforts, research projects, and educational projects. The results suggest that negotiation and mediation efforts have been on the increase. Research was viewed as an important process for building collaborative networks among diverse groups. The authors suggest that there is a limited understanding of the factors contributing to social values for natural resources; an inadequate understanding of new forestry practices and their impacts; and a weak link between public involvement and natural resource decision making.

**Englin, J.; Boxall, P.C.; Chakraborty, K.; Watson, D.O. 1996. Valuing the impacts of forest fires on backcountry forest recreation. For. Sci. 42(4):450–455.**

This paper links a trip-site choice model (random utility model) and a trip-frequency model (Poisson) to understand backcountry recreation in Nopiming Park in Manitoba. The results show that burned forest areas, distance between sites and how the presence of boat launches affect recreation site choices. Developed canoe launching sites are valued by the recreationists, but fire damage is not. The value of launch site improvements to the canoeists could be substantial.

**Englin, J.; Mendelsohn, R. 1991. A hedonic travel cost analysis for valuation of multiple components of site quality: the recreation value of forest management. J. Environ. Econ. Manage. 21(3):275–290.**

One benefit of managing forests is that one can alter the qualities of sites. The value of changing site qualities, however, is generally not known. This paper develops a formal hedonic travel cost model that can be used to estimate the value of both marginal and non-marginal changes to sites. The approach accommodates multiple simultaneous changes in site characteristics. Estimating this model using a set of permits from wilderness areas leads to revealed preference estimates of the recreational value of clear-cuts, old-growth, and nine other wilderness attributes.

**Fletcher, J.; Adamowicz, W.L.; Graham-Tomasi, T. 1990. The travel cost model of recreation demand: theoretical and empirical issues. Leisure Sci. 12:119–147.**

This article provides an overview of selected theoretical and empirical issues in the economics literature on the travel cost model of recreation demand. The key problem identified is the need to collect data specific to the needs of the model. The authors argue for future research on the aggregation of larger samples.

**Floyd, D.; Germain, R.; Horst, K. 1996. A model for assessing negotiations and mediation in forest resource conflicts. J. For. (94):29–33.**

These authors present a model for assessing alternative dispute resolution (ADR) techniques. Twelve forest-resource disputes that span a variety of issues and regions are analyzed with this model. The authors arrange the conflicts along a continuum, ranging from nonrenewable, commodity-based disputes (A) to preservation amenity disputes (D). Other categories include renewable, bio-commodity disputes (B) and use amenity conflicts(C). The model suggests that the intensity of a conflict should decrease as resources and uses are in closer proximity along the continuum.

**Fortmann, L.; Kusel, J. 1990. New voices, old beliefs: forest environmentalism among new and long-standing rural residents. Rural Sociol. 55(2):214–232.**

This study offers empirical evidence to refute the perceived conflict over forest use between migrating urbanites who settle in rural areas and long-standing rural residents. Fortmann and Kusel dispute the long-held belief that better-educated urban residents who move to rural areas are prone to environmental activism (e.g., preservation of natural landscapes), while their long-time counterparts are in favor of continued commodity uses. Instead, the authors hypothesize that both long-time rural residents and recent urban migrants can hold proenvironmental perspectives on forest use and that both groups will be equally dissatisfied with forest-management policies and actions of the U.S. Forest Service. From their mail survey of two forest areas in California, the authors found that residency, education, or occupation did not determine a proenvironmental stance. Gender, however, was an important variable in explaining proenvironmental attitudes.

**Freeman, A.M. 1993. The measurement of environmental and resource values: theory and methods. Resources for the Future, Washington, D.C.**

This book reviews and summarizes the basic theory of economic welfare measurement and the development of complementary resource evaluation and benefit measurement techniques. It examines the basic methods and models for deriving welfare and value measures from the revealed choices of individuals and from observed changes in market prices. The concept of existence value, hypothetical models such as contingent choice methods, valuation across time, and aspects of uncertainty in the theory of value and welfare change are also examined. The book applies these theoretical concepts to case studies ranging from environmental change and housing prices and wage rates to the valuation of resources that support recreation activities.

**Gale, R.; Miller, M. 1985. Professional and public natural resource management arenas: forests and marine fisheries. Environ. Behav. 17(6):651–678.**

Modern natural resource management systems are defined by the interplay of natural resources, profit-seeking resource industries, management bureaucracies, and diverse publics. Focusing on the bureaucratic element, this article presents a comparative analysis of the federal management of forests and marine fisheries. Forest policy involves the U.S. Forest Service and occurs in a professional management arena; fishery policy involves the national Marine Fisheries Service and affiliated regional fishery management councils, and is conducted in a public-management arena. The two arenas differ in their organization of power, knowledge, and communication. This model is briefly extended to other natural resource management systems.

**Gericke, K.; Sullivan, J. 1994. Public participation and appeals of Forest Service plans: an empirical examination. Soc. Nat. Resour. 7(2):125–135.**

This article employs logit analysis on public participation activity by the U.S. Forest Service

in the development of 61 forest land management plans. In the examination of the relationship between public participation and conflict in U.S. Forest Service planning, conflict is hypothesized as a function of public participation effort, the public perception of their concerns being addressed, and the attributes of each forest.

**Gericke, K.; Sullivan, J.; Wellman, J. 1992. Public participation in national forest planning: perspectives, procedures, and costs. J. For. 90(2):35–38.**

As part of the planning process, the U.S. Forest Service is required to provide for public participation in the planning, review, and development of land management plans. National forest planning has been an expensive undertaking. There is not, however, an available record of the level of public involvement in planning. Without adequate detail about public participation, it is difficult to assess benefits and costs, as well as to adapt efforts to meet the changing needs of society during the continuing planning process. This paper presents survey data collected from U.S. Forest Service staff involved in forest planning efforts, and those most knowledgeable about the role of the public in these plans. Results discussed include respondents' perceptions of the relative importance of various public participation techniques, details of how the public participation was conducted, and how much time was spent in public participation. Costs of public participation are also discussed.

**Grant, W. 1990. Forestry and forest products. Pages 118–140 *in* W. Coleman and G. Skogstad, eds. Policy communities and public policy in Canada. Univ. Toronto Press, Toronto, Ontario.**

Grant argues that the state has well-developed capabilities for relating to the forest industry at federal and provincial levels. The national forest policy network is institutionalized with strong corporate linkages. Despite the emergence of new environment priorities that are difficult to reconcile with industrial requirements, industry has developed "strategies of cooptation to deal with these new problems." The interaction among provincial governments, the federal government, and industry organizations in developing such strategies are described. Grant warns that the exclusion of legitimate environmental concerns could ultimately have severe negative ramifications for the forest industry.

**Gundry, K.; Heberlein, T. 1984. Do public meetings represent the public? J. Am. Plann. Assoc., 50(Spring):175–182.**

This study finds that the opinions obtained at public meetings appear to broadly represent those of the relevant public if: the meetings are well publicized; they are held so that all parties have easy and equal access; and all participants at the meeting are consulted about their opinions. This report analyzes three projects designed to measure the representativeness of meeting participants compared to the general population on demographic characteristics, opinions on policies, and opinion variance. The research findings were consistent despite differences in the scale of public meetings (one city-wide, one country-wide, and one state-wide), subject, level of controversy, and length.

**Haugh, A. 1994. Balancing rights, powers and privileges: a survey and evaluation of natural resource co-management agreements reached by the government and First Nations of Manitoba. Unpubl. Masters thesis, Univ. Manit., Winnipeg, Manitoba.**

This master's thesis is a qualitative evaluation and survey of 18 cooperative management agreements reached between the Manitoba government and Manitoba First Nations. It catalogues the historical and legal developments of natural-resource management in the province and then reviews the comanagement agreements. Using data from descriptive interviews, the author provides an evaluation of the agreements. Comanagement agreements related to many different resources are examined, including big game hunting, fisheries and forestry.

**Heberlein, T. 1976. Some observations on alternative mechanisms for public involvement: the hearing, public opinion poll, the workshop and the quasi-experiment. Nat. Resour. J. 16:197–212.**

This piece makes observations on alternative mechanisms for public involvement and discusses the advantages and disadvantages of the hearing, the public opinion poll, the workshop, and the quasi-experiment. These new mechanisms are needed because of the current demand for public involvement in the natural

resources decision-making process. This report finds that of the four alternative techniques, the workshop and the quasi-experiment are the most effective in reflecting the views of the general public. The public hearing and opinion polling are less-promising. None of these techniques is without flaws, and the author suggests a combination of techniques would be more effective and provide more-accurate information on public values to policy makers than would employing single strategies in isolation.

**Heberlein, T.; Black, J. 1976. Attitudinal specificity and the prediction of behaviour in a field setting. J. Pers. Soc. Psychol. 33:474–479.**

The hypothesis that specific attitudes are more highly correlated with behavior than general attitudes was tested in a field setting. The study was designed to eliminate several potentially confounding factors in previous experiments. Sampling from the customers of a major oil company in early 1973, actual purchase behavior was observed for 147 lead-free gasoline customers and for 156 regular-gasoline buyers. The buyers' attitudes and beliefs about gasoline and air pollution were ascertained by a mailed questionnaire. Eight attitude scales were constructed and ranked empirically into four levels of specificity.

**Hetherington, J.; Brown, T. 1994. Anything goes means everything stays: the perils of uncritical pluralism in the study of ecosystem values. Soc. Nat. Resour. 7(6):535–546.**

There are two essential questions that need to be addressed by social science researchers and public-land managers. What values do people assign to forest ecosystems? What is the best research strategy for understanding those values? To answer the first question, a number of contemporary definitions of value are considered, and a human-preference-based definition is advocated as most-appropriate for scientific inquiry and for guiding public environmental policy. To answer the second question, the strategies of methodological pluralism and critical multiplism are compared. Methodological pluralism risks equating opinion and fact. Critical multiplism, it is argued, provides the best strategy for understanding the multifaceted values people assign to forests. The combination of the public-preference-based definition and the critical-multiplism strategy offers the best opportunity for the development of forest ecosystem management policies that balance facts (e.g., biophysical functions) with values (e.g., human preferences).

**Higgelke, P.; Duinker, P. 1993. Open doors: public participation in forest management in Canada. Report to the Canadian Pulp and Paper Association, and Forestry Canada. School For., Lakehead Univ., Thunder Bay, Ontario.**

This forest-industry-sponsored report examines 11 cases of public involvement in resource and development planning in order to determine useful approaches to public involvement. The cases were selected to provide a broad range of possibilities of involvement techniques; nine deal with forest planning in Canada; one deals with public participation in forest planning in the U.S.; and one is a Canadian non-forest case. The case were further divided into two sets. One set uses public presentations, discussion and comment forums, newsletters, open houses, and other techniques to generate dialogue and provide forest-product companies with a better understanding of public concerns. The second set uses committee-based participation efforts. Regardless of technique employed, forest product companies must support participation in order for these processes to work well. To maintain credibility, companies much be willing to listen to changes and admit mistakes, and work to keep the lines of communication open.

**Honnold, J. 1984. Age and environmental concern. J. Environ. Educ. 16:4–9.**

Two major explanations of the well-documented inverse relationship between age and environmental concern have been suggested. They are the differences that are due to the sociobiological processes of aging; and the differences due to the way in which important historical events have affected birth cohorts. Palmore's (1978) method is used in this study to distinguish possible aging, cohort, and (additionally) period effects, explaining time series differences by age groups in the general, social science survey data. The analysis suggests that the decline in environmental concern among most age groups can be accounted for by period effects, but that an aging effect is important

among young adults. Implications for environmental education are discussed.

**Howell, S.; Laska, S. 1992. The changing face of the environmental coalition: a research note. Environ. Behav. 24:134–144.**

In this chapter, the changes in the environmental coalition over the 1980s are examined. During these years, concern over environmental problems increased. One of the questions addressed is how the coalition favoring greater environmental protection changed. A logistic regression is employed to determine the changing support for increased environmental spending. The study found that ideology, party identification, and age are less-important determinants of environmental attitudes than are education and urban residence. The implications of these results are discussed.

**Howlett, M.; Raymer, J. 1994. Do ideas matter? Policy network configurations and resistance to policy change in the Canadian forest sector. Can. Public Adm. 38(3):382–410.**

Howlett and Raymer employ the policy-community and policy-network approach to argue that Canadian forest-management policies have not significantly changed in the past 20 years. They argue that despite the emergence of environmental groups, the shift to sustainable forestry practices has not occurred. The configuration of the contemporary Canadian forest-policy networks are described as closed, and either being 'captured' by industry interests as in British Columbia and New Brunswick, or 'clientalistic', or controlled by the state, as in Nova Scotia and Saskatchewan. In both cases, the authors stress an exclusive partnership between the state and the forest industry in creating forest management policy. There is only one major idea that dominates the Canadian forest sector, namely the continued importance of commercial timber, the authors contend. The relationship with the rest of the policy community, which does not necessary agree with the state and forest industry, and the policy network is described as being 'fractious'. The remainder of the paper elaborates on these theoretical arguments by examining issues of forest management, tenure, and planning.

**Inglehart, R.; Flanagan, S. 1987. Values in industrial societies. Am. Polit. Sci. Rev. 81:1289–1319.**

This study examines aggregate cross-national and time-series data. Its authors argue that conflict and tension in western industrial societies are rooted in value-based rather than class-based differences. They argue that there has been a diminishing degree of both economic determinism and class-based political conflict. In Europe, there has been a growing popularity of political parties whose membership comes from a postmaterialist middle class.

**Jackson, B. 1987. Fieldwork. Univ. Illinois Press, Chicago, Illinois.**

This book is intended to give the reader a sense about the questions asked and the problems encountered by those who do fieldwork, particularly fieldwork that generates qualitative, narrative data. It includes discussion about useful measuring equipment and the rules surrounding the use of this equipment, as well as the logical ends of such uses. The author claims that the ultimate goal of fieldwork is for the researcher to learn something while obtaining reliable and valid information in an honorable, ethical manner.

**Jackson, E.L. 1989. Public views about resource development and preservation: results from an Alberta study. Can. Geogr. 33(2):163–168.**

This article considers the results of a 1984 Alberta study that examined the relationships among views on preservation, resource development, and more deep-seated attitudes towards the environment. A secondary aim was to assess the degree of elitist bias in preservationist perspectives. Various socioeconomic characteristics were controlled. The results indicate that preservationist attitudes have been widely adopted among urban residents. Pro-development statements were unpopular with urban respondents. This group favored controlled development and restricted use of lands for recreation and other purposes. Socioeconomic status had little or no effect on the relationships found in this study, indicating that environmental and resource preservation attitudes are not predominant among a middle class/upper-middle class elite, and that similar attitudes can be found across all social strata.

**Jacquemot, A.; Reid, R.; Filion, F.L. 1986. The importance of wildlife to Canadians: the recreational economic significance of wildlife.**

**Environ. Can., Can. Wildl. Serv., Ottawa, Ontario.**

This report examines the economic significance of recreational wildlife use with data from the 1981 National Survey on the Importance of Wildlife to Canadians. The focus is very clearly on expenditure impacts, and the report provides an excellent overview of input-output methods and their application to assess national and provincial expenditure impacts. The report also addresses the nonmarket values of wildlife using the contingent valuation method. This latter treatment is somewhat cursory, and the methods used to examine the nonmarket values are probably not up to the standard of the Arrow et al. (1993) report.

**Johnson, K.; Johnson, R.; Edwards, D.; Wheaton, C. 1993. Public participation in wildlife management: opinions from public meetings and random surveys. Wildl. Soc. Bull. 21:218–225.**

For effective decision making, wildlife management agencies must consider public opinions and potential public responses to management policies. In order to do this, many agencies hold routine open meetings or workshops to obtain public input. This study illustrates how these meetings might not always involve a representative sample of the affected public. The case study reveals that those who attended mule deer management meetings in Oregon had opinions that differed in general from the mule deer hunting population. Because opinions expressed in public meetings are often incorporated into management decisions, the representativeness of meeting participants should be monitored.

**Johnson, P.; Duinker, P. 1993. Beyond dispute: collaborative approaches to resolving natural resource and environmental conflicts. School For., Lakehead Univ., Thunder Bay, Ontario.**

The authors present five Ontario-based case studies of community-based conflict resolution between nontimber interests (largely tourist operators and fishermen) and Forest Management Agreement (FMA) holders. There were varying degrees of success among the cases in overcoming conflict, and the authors conclude that there is no single "recipe" to achieving resolution. They argue that a conflict can be conceptually understood as a five-stage life cycle. The report also discusses the anatomy of a conflict, (types of conflict, complexity, limitations), the essential steps of consensus-based conflict resolution, types of conflict-resolution forums, and why in some cases, solutions are impossible to achieve. According to the authors, the key step in resolving a conflict is establishing and building a process to which all interested parties can agree. These include such considerations as determining the overall purpose, duration, role of the mediators, and compliance to ground rules. The work discusses the importance of improving public participation in natural resource conflicts in Canada.

**Jones, R.E.; Dunlap, R. 1992. The social bases for environmental concerns: have they changed over time? Rural Sociol. 57(1):28–47.**

Using data obtained from the National Opinion Research Center's general social survey (1973–1990), this paper tests two hypotheses concerning possible changes in the sociopolitical correlates of environmental concern. The "broadening base" hypothesis predicts that environmental concern will diffuse throughout the populace, resulting in a broader base of support for environmental protection, whereas the "economic contingency" hypothesis predicts that the economically deprived will disproportionately withdraw support for environmental protection during economic downturns. Analysis of data over 18 years, however, failed to lend any clear support for either of the hypotheses. Instead, results indicate that the social bases of environmental concern—or at least as is measured by the center's environmental spending item—have remained remarkably stable over nearly two decades, despite fluctuating economic, political, and environmental conditions. Younger adults, the well-educated, political liberals, Democrats, those raised and currently living in urban areas, and those employed outside of primary industries were found to be consistently more supportive of environmental protection than were their respective opposites.

**Kamakura, W.; Mazzon, J. 1991. Value segmentation: a model for the measurement of values and value systems. J. Consum. Res. 18(2):208–218.**

This article develops a model for the measurement of human values that, rather than obtaining aggregate measurements, identifies distinct

value systems within a population and classifies individuals according to them. These value systems are inferred from the stated priority rankings obtained from each individual via the Rokeach value survey.

**Kellert, S.; Brown, P. 1985. Human dimensions information in wildlife management, policy, and planning. Leisure Sci. 7(3):269–279.**

In order to manage resources effectively, managers need an understanding of human relationships with resources. Four focus areas of human dimensions are suggested as necessary for understanding, identifying, and serving the public and resource-management fields. These are: constituency identification; multiple satisfactions management; social impact and trade-off analysis; and public awareness and education. Constituency identification includes identification of stakeholders, their needs, motives, values, and perceptions. A recognition that stakeholders can be diverse and change over time is essential to proper analysis.

**Kennedy, J. 1985. Conceiving forest management as providing for current and future social value. For. Ecol. Manage. 13:123–128.**

The author emphasizes the role of planning and management in providing for forest social values to current and future citizens. Contemporary North American societal values related to forests originated in western industrial society. For most of the last 200 years, the social needs of public and private forests in the western world were predominantly utilitarian and their immediate social value was well-expressed in market prices. As these countries urbanized, romantic and symbolic forest values increased. Today, the social values of forest recreation, landscapes, and nongame wildlife are of increased importance. Because utilitarian social values are often in conflict with romantic/symbolic forest values of today, foresters increasingly are placed in the role of conflict managers. In what they do and do not do, foresters can mitigate or exacerbate forestry social conflict.

**Klemanski, J.; Steel, B. 1989. Citizen attitudes, knowledge and participation in environmental policy-making: Michigan, Ontario, and the case of acid rain. Mich. Acad. 21(2):175–189.**

As postindustrial societies, Canada and the U.S. face many technical and scientific policy problems, or a "democracy and technocracy quandary." This is a dilemma in which formally democratic systems, though committed to popular participation, can exclude average citizens from policy areas that require technical expertise. Issues included in this dilemma are nuclear power plant construction, proper use of dwindling natural resources, and environmental pollution. Survey data from the general public in the state of Michigan (n = 476 adults) and the province of Ontario (n = 600) are used to assess the relationships among educational levels, policy-relevant knowledge, individual risk assessments, political attitudes, and support for citizen participation. Using the acid rain issue as a case study, the authors found that the prevailing weather patterns in the study area lead Canadians to perceive acid rain as a problem created primarily by the U.S. Actual participation was not monitored; instead, a set of political orientations was used as a proxy to represent the extent to which individuals were involved. It was found that citizens were willing to do something about the issue of acid rain if they believed that the government was open to citizen views on environmental issues; if they valued their own participation efforts and personally sought to influence natural resource policy making; and if were knowledgeable, articulate, and dissatisfied with the current environmental policies of the Canadian and U.S. governments. It was also found that environmental risk perception was the most important factor in intervention orientation. Not surprisingly, Canadians were thus more likely than residents of Michigan to perceive personal health or economic risks from acid rain.

**Knopp, T.; Caldbeck, E. 1985. Testing a new method of public input to the allocation of state forest lands to alternative land-use combinations. Dep. For. Resour., Inst. Agric. For. Home Econ., Univ. Minn., St. Paul, Minnesota. Staff Pap. Ser. 51.**

This report refutes the traditional notion that sound forest management and decision making are built on a tradition of autonomy. For many years, professional foresters have been regarded as those who know what is best; however, there has been a public criticism of the forester's ability to adapt to changing demand for services

the public expects from forests as well as demand by the public for greater involvement in the planning process. The authors argue that if there is to be truly meaningful involvement, two fundamental criteria must be fulfilled. First, all interested individuals should be presented with a comprehensive array of choices described in unambiguous language. Second, the input from individuals should be presented in a straightforward manner so that all are able to appreciate the complexity of the management decision being made.

**Kuentzel, W.F. 1996. Socially acceptable forestry: mediating a compromise or orchestrating the agenda? Pages 49–63 *in* M.W. Brunson, L.E. Kruger, C.B. Tyler, and S.A. Schroeder, tech. eds. Defining social acceptability in ecosystem management: a workshop proceedings. U.S. Dep. Agric., For. Serv., Pac. Northwest Res. Stn., Portland, Oregon. Gen. Tech. Rep. PNW-369.**

This article examines the role of the U.S. Forest Service in the creation of ecosystem management. Kuentzel draws on a wide range of sociological and political science theory to demonstrate different ways that actions of the U.S. Forest Service are interpreted. In contrast to U.S. Forest Service claims of being impartial mediators between competing interests in society, the author suggests that the U.S. Forest Service has its own interests in policy outcomes and attempts to protect those interests through its actions. Kuentzel essentially acknowledges that the state is a special type of stakeholder, but a stakeholder nonetheless. He encourages U.S. Forest Service employees to consider themselves and their institution as social participants that are not above forest politics, but rather as interest-holders that are very much enmeshed in forest politics.

**Kuentzel, W.; Tritton, L.; Dennis, D.; Wang, D. 1995. Thinking about water quality management: social values, wetland ecology, and landowner practices. Pages 156–162 *in* H.K. Cordell, L. Caldwell, and S. Mou, eds. Proc. Conf. Integrating Soc. Sci. Ecosystem Manage.: Natl. Challenge, December 12–14, 1995, Helen, Georgia. U.S. Dep. Agric., For. Serv., Southern Res. Stn., Asheville, North Carolina. Gen. Tech. Rep. SRS-17.**

This paper analyzes how social values can affect wetland management. Three frameworks are outlined: social utility, action theory, and epistemological frameworks. Value from the social-utility framework arises from an object's usefulness for human purposes. Values from the action-theory framework consists of objects existing in society that facilitate coordinated activity. Value from the epistemological framework arises from routine practices of everyday life. This report illustrates the way in which a manager's assumptions about value formation, value change, and human behavior differ according to the value framework used.

**Kuhn, R.; Jackson, E. 1989. Stability of factor structure in the measurement of public environmental attitudes. J. Environ. Educ. 20:27–32.**

A 21-item scale, combining and modifying the "new environmental paradigm" and "dominant social paradigm" scale developed by Dunlap and Van Liere, was used in two surveys in Edmonton and Calgary, Canada. This paper compares attitudinal dimensions resulting from factor analysis. Similarities between the two studies in terms of relationships between scores on the scale and preferences for energy related options are also assessed.

**Lawrence, J.; Cook, T. 1982. Designing program evaluations with the help of stakeholders. J. Policy Anal. Manage. 2(1):120–123.**

This paper outlines the process used to conduct a stakeholder interest survey in a government food plan. Preliminary identification of stakeholders, data collection, and potential research and planning value of the data are discussed. The authors feel that the unstructured interview format used for the survey allowed the respondents to be less-guarded in their answers. Quantified data were not generated by this process, yet the authors note that quantifying a stakeholder survey might not be particularly useful due to the process required to collect such data.

**Lawrence, R.L.; Daniels, S.E. 1996. Public involvement in natural resource decision-making: goals, methodology, and evaluation. For. Res. Lab., Oregon State Univ., Corvallis, Oregon. Pap. For. Policy 3.**

This report includes a discussion of three dimensions of public involvement in natural

resource decisions: goals associated with public involvement; guiding principles for implementing public-involvement processes; and methods for evaluation of public-involvement processes. The report also includes a selectively annotated bibliography on these topics.

**Layder, D. 1993. New strategies in social research. Polity Press, Cambridge, England.**

This book outlines a set of new research strategies that can be used in conjunction with more-established methods and strategies. These strategies are particularly suited to research that not only concentrates on the discovery of new findings or data about a particular aspect of society, but is also aimed at constructing theory from the material unearthed by the research. Middle-range and grounded-theory techniques are discussed, and a research map is developed that combines the qualitative and the quantitative schools.

**Loomis, J.B. 1993. Integrated public lands management. Columbia Univ. Press, New York, New York.**

In this economics textbook, Loomis evaluates how four American federal agencies, the U.S. Forest Service, Bureau of Land Management, Fish and Wildlife Service, and National Park Service, engage in natural-resource planning. Each agency's planning process, wildlife habitat models, linear programming, and input-out and benefit–cost analyses are examined with case studies from the Arctic National Wildlife Refuge and Yosemite National Park. The application of bioeconomic models and nonmarket resource valuation to wilderness-allocation decisions on federal lands are also made. Suggestions for improving current integrated-management policies at the federal and state levels are made.

**Luckert, M.K. 1992. Changing values of natural resources and the evolution of property rights: the case of wilderness. Pages 85–99 *in* M. Ross and J. Owen Saunders, eds. Growing demands on a shrinking heritage: managing resource-use conflicts. Can. Inst. Resour. Law, Calgary, Alberta.**

As new values emerge, they should be assessed according to characteristics that determine whether they are marketable in an economic context. Some services provided by public lands are marketable and could be internalized with private-property rights. Other services provided by publicly owned resources contain values that are external to the market considerations under systems of private-property rights. In these cases, public-property rights can be superior. The author argues that wilderness values should not be under private control because the provision of values will be inferior. Furthermore, the resulting distribution of wilderness values among societies with private property rights will likely be unacceptable. Luckert feels that judicial and political processes can better allow for the representation of the vast assortment of values associated with the wilderness. Luckert also suggests that such processes explicitly take account of distributional concerns and are in themselves valued by society.

**Luckert, M. 1993. Property rights for changing forest values: a study of mixed wood management in Canada. Can. J. For. Res. 23(4):688–699.**

Property rights must be adjusted as new forest values emerge. This study presents an analytical framework that can be used to assess whether private negotiations between firms and governments can optimally accommodate newly emerging values. A study of mixedwood management in Canada reveals that private negotiations form a central role in many mixedwood policies with varying degrees of success. The analytical framework is used to illustrate that successes in mixedwood policies can be attributed to tenure structures that facilitate trades in property rights, whereas problems can be explained by constrained or absent markets for property rights. Although private market negotiations can accommodate emerging values in the case of mixedwood management, physical characteristics, and social values associated with nontimber resources can prevent such solutions and therefore require government regulation.

**Lyden, F. 1988. Value orientations in public decision making. Policy Stud. J. 16(4):843–856.**

This study reports on research based on the value orientations approach developed by Florence R. Kluckhohn. The purpose of the study is to examine how culturally determined differences in value orientations can be employed to identify sources of intercultural conflicts and misunderstandings. Federal, state,

and local government agency employees concerned with natural-resource management were interviewed along with their counterparts in three client groups common to all (a bank, a timber company, and an Aboriginal group). Kluckhohn's value profiles of each group were compared to determine whether they could explain the bases for misunderstandings and conflicts. Lyden found that the stereotypes that society is thought to hold about several of the groups are incorrect. Furthermore, the misperceptions each group has about the real values of other groups could well provide the bases for misunderstandings on the use of natural resources. The Kluckhohn profiles appear to provide more-constructive grounds for explaining the bases for these differences than either the dominant social paradigm or the new environmental paradigm.

**Maloney, M.; Ward, M.; Braucht, G. 1975. A revised scale for the measurement of ecological attitudes and knowledge. Am. Psych. 30:787–790.**

In a preliminary attempt to provide data on what the general population thinks, feels, knows and actually does regarding ecology and pollution, Maloney and Ward (1973) developed a 128-item ecological attitude-knowledge scale. Maloney, Ward, and Braucht seek to refine and shorten the original scale to provide a more-practical and efficient instrument that would be publicly available.

**McConnell, K.E. 1985. The economics of outdoor recreation. *In* A.V. Kneese and J.L. Sweeney, eds. Handbook of natural resources and environmental economics. Vol. II. North Holland Press, New York, New York.**

An overview of the conceptual and empirical approaches, problems, and solutions to the economics of outdoor recreation is provided. McConnell argues that outdoor economics is both a distinctive and important field of economics due to the development of large-scale projects on government land holdings, the emergence of environmental values, and an appreciation of recreation by the general public. The travel cost model, contingent valuation, the household product function, and forecasting the demand for outdoor recreation are discussed in detail, as are the empirical methods for measuring the supply of, and the demand for, outdoor recreation.

**McDaniels, T. 1992. Decision analysis insights for old growth forest conflicts. Environments: J. Interdiscip. Stud. 21(3):39–52.**

This paper considers decision analysis as a framework for clarifying public choices regarding old-growth forest preservation. The basic steps of decision analysis are reviewed, with emphasis on the method as a structured process for diagnosing conflict, fostering negotiation, and creating better alternatives; and the particular issues associated with analyzing reductions in commercial harvests to increase wilderness preservation. A scenario with characteristics drawn from a number of actual old-growth forest conflicts in British Columbia illustrates the potential role of decision analysis. It shows the importance of clarifying objectives as a means to constructing new and superior alternatives for conflict resolution.

**McFarlane, B.L.; Boxall, P.C. 1996. Exploring forest and recreation management preferences of forest recreationists in Alberta. For. Chron. 72(6):623–629.**

This paper examines the social values of campers using campground-management preference and forest attitude scales. Overall, campers did not support increased facility development at campgrounds, did not view current forest-management practices as sustainable, were not supportive of economic development associated with traditional timber management, and supported the preservation aspects of forest management. Four camper-specialization clusters were delineated that identified differences in management preferences. Campers most familiar with the area and those with the most camping experience were the least-supportive of traditional timber management and campground development. The forest-attitude scale presents a method to compare attitudes of stakeholder groups and to monitor attitude change through time.

**Miller, P. 1982. Value as richness: toward a value theory for an expanded naturalism in environmental ethics. Environ. Ethics 4:101–114.**

There is a widespread conviction among nature lovers, environmental activists, many writers on environmental ethics, and others that the value of the natural world is not restricted to its use to humankind; that is, the

natural world has its own intrinsic worth. Most contemporary value theories are psychologically based; however, and are accordingly ill-suited to characterize such natural intrinsic value. The theory of "value as richness" presented in this paper attempts to articulate a plausible, nonpsychological theory of value that accommodates environmentalist convictions as well as more-traditional value concerns. It has implications not only for our care for and preservation of nature, but also for the general enrichment of human lives.

**Mitchell, R.C.; Carson, R.T. 1989. Using surveys to value public goods: the contingent valuation method. Resources for the Future, Washington, D.C.**

This book describes the theory and practice of contingent valuation. It provides some treatment of the economic theory underpinning the method as well as a number of case studies. This book is considered the standard reference text for the contingent valuation method.

**Mohai, P. 1985. Public concern and elite involvement in environmental conservation issues. Soc. Sci. Q. 66:820–838.**

The belief that environmental values are predominantly upper-middle class values and that the environmental movement furthers class interests has partially resulted from confusing environmental-protection supporters with environmental activists. Using a model derived from an integration of social-psychological and resource-mobilization perspectives, hypotheses are tested that demonstrate that the link between the upper-middle class and environmental activism is a link between socioeconomic status and factors of political activism, rather than a link between the upper-middle class and environmental concern.

**Mohai, P. 1987. Public participation and natural resource decision making: RARE II decisions. Nat. Resour. J. 27(1):123–155.**

The role of public participation on U.S. Forest Service decision-making is examined from contrasting perspectives presented in recent studies by Twight and Culhane. Twight argues that the agency's professional-value orientation and organizational structure render it unresponsive to public input. Culhane, on the other hand, argues the opposite. The agency is responsive to diverse interest groups out of the desire to avoid conflict. Although it is the composition and activity of these groups that directly influence the agency, public participation is an important means of obtaining information about group concerns. Causes for the differences in perspectives are examined. Using recent evidence from the U.S. Forest Service's RARE II decision process, the Twight–Culhane perspectives are reassessed. The Mohai analysis indicates that the two schools of thought complement more than contradict each other. Implications for natural resource decision-making are discussed.

**Mohai, P. 1992. Men, women and the environment: an examination of the gender gap in environmental concern and activism. Soc. Nat. Resour. 5:1–19.**

Little information exists regarding gender differences in environmental concern and activism, and the information available so far has provided a mixed picture. Some studies indicate that men are more concerned than women, others indicate women are more concerned, and still others find no significant differences. This study provides additional evidence from national survey data. From these data, women were found to express greater concern for the environment than men, before and after applying multivariate controls for age, education, labor force/homemaker status, and other variables. The magnitude of the differences, however, was not great. Gender differences in environmental activism provided an ironic contrast. Even though women indicated somewhat greater concern, rates of environmental activism for women were substantially lower than for men. Furthermore, these differences were greater than differences in rates of general political participation, and persisted in spite of multivariate controls for socioeconomic status, homemaker status, and other variables. The idea that the environmental activity of women is constrained by factors in addition to those constraining general political activity supports earlier findings regarding the environmental activity of the black population. Common threads in these findings are explored.

**National Round Table on the Environment and the Economy. 1993. Building consensus for a**

**sustainable future. Round Table Environ. Econ. Can., Ottawa, Ottawa.**

In this publication, a set of 10 guiding principles for achieving sustainable development are gathered from the various provincial and national round tables that exist in Canada. It is argued that consensus is required for all stages of developing sustainability (from the establishment of broad policies and regulations, to long-range planning allocating land and resources, licensing, monitoring, and enforcement). Furthermore, consensus-based processes are preferred over other types of forums because they allow all interests to be represented, allow direct dialogue, and provide for cooperative problem-solving and partnerships in dealing with issues where conflicts could otherwise arise. Although there is no one approach for every single situation, the experience of the round tables point to a set of characteristics that are fundamental to consensus. The 10 principles for round tables are: purpose driven, inclusive participation, voluntary participation, self design, flexibility, equal opportunity, respect for diverse interests, accountability, time limits, and commitment to implementation of decisions and recommendations.

**Noe, F.; Snow, R. 1990. The new environmental paradigm and further scale analysis. J. Environ. Educ. 21(4):20–26.**

This research further confirms the claim of the multidimensionality of the New Environment Paradigm (NEP) scale. Evidence implies that a modified version of the NEP scale be used in further research because some items consistently discriminate better among different dimensions. The authors recommend using a 12-item NEP scale, or at a minimum, a nine-item scale.

**Novek, J. 1995. Environmental impact assessment and sustainable development: case studies of environmental conflict. Soc. Nat. Resour. 8(2):145–159.**

In this study, the political dynamics of environmental impact assessments (EIA) are explored by analyzing the controversy over proposed pulp-and-paper megaprojects in Alberta (the AlPac project) and in Manitoba (the Repap project). The study found that although the EIA is at the center of political debate, it internalizes rather than overcomes conflict. Provincial governments are often in the position of promoting and even subsidizing large-scale resource developments in their jurisdictions. When they do, they could compromise their ability to be effective regulators of those same developments. Governments have used EIAs to legitimize political actions and settle certain social claims. This conflict has raised questions as to the role of economic power, scientific expertise, and public participation in the EIA process.

**Nowak, P. 1992. Of what value are values in resource management? J. Soil Water Conserv. 47(5):356–359.**

This article deals with the discrepancy between preaching environmental values and acting upon them. While claiming the moral high ground on the basis of values can be personally gratifying, for an individual, it has diverted much-needed attention from understanding why land users might be unwilling or unable to act on these values. Nowak believes that values are best left in academia, because the processes of believing in value and being able to act on value are separate. Continued boosterism of values, such as stewardship and sustainability, only serves to obscure contradictions in market and resource policies, to rationalize rhetoric rather than promote reason, and to justify mediocrity in organizations with natural-resource responsibilities.

**Ostman, R.; Parker, J. 1987. Impact of education, age, newspapers, and television on environmental knowledge, concerns and behaviors. J. Environ. Educ. 19:3–9.**

The authors of this article examine effects of education, age, and consumption of environmental information from newspapers and television have on people's environmental knowledge, concerns, and behavior. Partial answers are based on a 1984 telephone survey of 336 residents of Ithaca, New York. Respondents' education levels and newspaper use led to greater effects on the level of environmental knowledge. Television use, both for specific environmental information and general knowledge, appeared to have some negative consequences. Age did not relate to the dependent variable.

**Pearse, P.H. 1988. Property rights and the development of natural resource policies in Canada. Can. Public Policy 14(3):307–320.**

*See* annotation for Pearse (1994).

**Pearse, P.H. 1994. Forest tenure, management incentives and the search for sustainable development policies. Chapter 5 *In* W.L. Adamowicz, W. White, and W.E. Phillips, eds. Forestry and the environment: economic perspectives., CAB Int., Wallingford, Oxford, England.**

The problem with Canadian forest management, according to Pearse, is rooted in the tenure system and the rights held by the users. There has been a growing public concern for the natural environment and a declining confidence in government. This has led to criticism, rightly or wrongly, of the way in which forest management is conducted in Canada. Unlike in many other forest nations, nearly all of Canada's forested lands are publicly owned. Industry usually holds rights, granted through various forms of leases, to harvest and manage those public forest lands. This is outlined in a discussion about management agreements and volume licences. Two major problems with the current tenure system are revealed. First, it discourages investment in silviculture and forest development; and second, it biases forest management in favor of timber production at the expense of other values. A possible solution is a change in the structure of property rights that would move leaseholders toward a model of stratified claims that would achieve the same results as a complete private property system.

**Pearse, P.H.; Holmes, T.P. 1993. Accounting for nonmarket benefits in southern forest management. South. J. Appl. For. 17(2):1–6.**

Current U.S. regulations stipulate that national forests must be managed with due consideration of the value of timber and nontimber outputs. The use of nonmarket-value information in the forest-planning process is hampered by an incomplete understanding of the conceptual basis and proper treatment of those values. This paper presents an overview of the basic economic principles underlying nonmarket valuation theory, and the available estimates of nonmarket values produced by southern U.S. forests. The main conclusion of the study is that existing nonmarket value estimates are useful for efficiency analysis at regional and national levels, but need to be adjusted to specific conditions for planning at smaller spatial scales such as the forest, ranger district, or watershed level.

**Pendzich, C. 1993. Conflict management and forest disputes—a path out of the woods? Forests, Trees and People Newsletter 20:4–9.**

This article discusses conflict resolution over forest lands in a variety of settings. Basic premises about conflict resolution are reviewed, as are a variety of strategies for conflict resolution. Conciliation, facilitation, negotiation, fact-finding, and mediation are defined. There are certain difficulties raised by power differentials among local stakeholders. Some of these could be overcome through the use of proven conflict-resolution methods administered by professionals.

**Peterson, G.; Sorg, C. 1987. Toward the measurement of total economic value. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Gen. Tech. Rep. RM-148.**

Considerable progress has been made in recent years in the valuation of nonpriced goods; however, emphasis has been on those things most-readily measurable. Valuation of wildlife benefits, for example, has aimed at consumptive, on-site recreation use (e.g., hunting and fishing). The problem with these partial estimates of value is that measuring only the on-site consumptive use of wildlife can be mistaken for measuring the total value. This report examined the task of measuring on-site nonconsumptive wildlife values by considering the total value, option value, existence value, quasi-option value, and bequest value. Discrepancies in definitions, measurement problems, and research needs are addressed in this collection of papers.

**Peterson, M.; Peterson, T. 1993. A rhetorical critique of nonmarket economic valuations for natural resources. Environ. Values 2(1):47–65.**

Various nonmarket economic-valuation methods have been used to compute the total value of nonmarket natural resources and related recreation. The authors outline the history of these valuation techniques. To do this, they use the Exxon Valdez disaster response and the

valuation of endangered whooping cranes as examples of how these tools can constrain policy. They explain that by excluding noneconomic social spheres, economic-valuation techniques produce results that clouds policy makers' vision of the ecological problems faced by society. Luhmann's functionalist social theory is used to demonstrate that when natural-resource managers place priority on economic motives, they trivialize other social functions such as education, politics, religion and law.

**Pierce, J.; Steger, M.; Stell, B.; Lovrich, N. 1992. Citizens, political communication, and interest groups: environmental organizations in Canada and the United States. Praeger, New York, New York.**

This study surveyed over 4000 people on their views concerning acid rain. The authors use their findings to demonstrate the value and importance of interest groups in modern, technologically complex democracies. Ultimately, they argue that the key to interest-group activity is the communication of policy-relevant technical knowledge and information. When the stakes are perceived to be high, contemporary citizens demand greater access to information and opportunities for participation in the formation of public policy.

**Pratt, L.; Urquhart, I. 1994. The last great forest: Japanese multinationals and Alberta's northern forests. NeWest Press, Edmonton, Alberta.**

This book provides a perspective on the events that unfolded during the expansion of Alberta's forest industry during the mid- to late 1980s. Pratt and Urquhart argue that during the 1950s and 1960s, the Alberta government was not interested in the subsidization of the province's forest industry. It is was only after the oil crisis of the 1970s and the election of the Don Getty Progressive Conservative government in 1986 that changes to Alberta's forest sector came about. Part of the reason for the policy change was the desire by the Getty government to diversify the province's economy beyond its dependence on the oil and gas and agricultural sectors, the authors assert. The Province then actively solicited south-east Asian pulp-and-paper interests to locate in Alberta to develop the vast, unused northern boreal forests. The book chronicles the conflicts that arose between Aboriginal and environmental groups, the Alberta government, Daishowa-Marubeni International (DMI), and Alberta-Pacific (AlPac). The public-participation and input processes were seriously undermined during the disposition of the FMAs and during the environmental impact assessments for both projects, the authors argue. The authors conclude that the industrial development of Alberta's forests was fueled by political desires and a neglect for economic rationality and environmental concerns, and that Aboriginal rights were violated.

**Pross, P. 1992. Group politics and public policy. 2nd. ed. Oxford Univ. Press, Toronto, Ontario.**

Interest groups are the major outlet for public participation in the Canadian political process, according to Pross. Special-interest groups have only emerged in the past 25 years as major political participants. Before then, most political decisions originated in the bureaucracy or from political parties. Pross introduces the policy community and policy network as the framework for understanding the relationships between various interest groups and the government in the policy-making process. Policy decisions tend to be made by a "sub-government" (Pross's term) within a particular sector rather than by a entire political system. Subgovernments are composed of "specialized-publics" within a specific policy sector that have the level of expertise to make critical decisions on policy change. Membership in each subgovernment includes the minister and senior officials responsible for the particular portfolio, representatives from related government agencies, and key institutionalized interest groups. To the periphery of the subgovernment is the "attentive public", a loose constellation of private and public participants who are affected by or interested in the policies of specific agencies and who follow, and attempt to influence, those policies but do not participate in policy making on a regular basis. The policy network refers to the relationships among specific participants, especially within the subgovernment.

**Quigley, T. 1989. Value shifts in multiple use products from rangelands. Rangelands 11:275–279.**

This paper reviews the history of land-use values for western rangelands from pre-1900 to

1989. Four values important in natural-resource decision making are identified: use value, option value, quasi-option value, and existence value. The demands for natural resources and products are reflected in these values. These demands are not constant, and shifts in value often occur. Established markets can adjust to the shifts if all costs and benefits are reflected in prices, yet this is problematic because not all costs and benefits are reflected in prices. Accordingly, production adjustments and allocation changes must be made in the multiple-use aspects of rangelands through nonmarket decision processes. A survey of U.S. Forest Service employees was used to determine how employees perceived public-use values in the five traditional uses of national forests (timber, water, recreation, grazing, and wildlife). One conclusion is that public values associated with rangelands have shifted over time. Although U.S. Forest Service policy does not closely mirror changes in public values, legislation tends to follow these value shifts. Adequate value information is therefore needed for legislators to perceive public values accurately.

**Randall, A. 1987. The total value dilemma. Pages 3–13 *in* G. Peterson and C. Sorg, eds. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Gen. Tech. Rep. RM-148.**

Total value can be measured directly, or component-by-component. The first approach discussed by Randall restricts estimation techniques to the contingent valuation method. The second allows a wider range of estimation methods, though there are conceptual difficulties in formulating the relationship between total value and component values. This dilemma is elaborated and some partial solutions are suggested.

**Reading, R.; Clark, T.; Kellert, S. 1994. Attitudes and knowledge of people living in the Greater Yellowstone ecosystem. Soc. Nat. Resour. 7(4):349–365.**

This study presents telephone-survey data from 308 respondents living within and adjacent to the Greater Yellowstone Ecosystem (GYE). The data reveal a concern that further coordinated management of the area could have adverse consequences on local economies and lifestyles. Respondents recognized that coordinated management of wildlife conservation in the GYE is important, but misunderstood the implications of this management. Respondents opposed restrictions on park visitation as a way of protecting the GYE, arguing that such management would mean greater bureaucratic control over the region in general, and could possibly harm the local economy associated with timber-harvesting. Most respondents were knowledgeable about the area's attributes, but few are aware of the sizable problems facing coordinated management of the GYE. A statistical test called analysis of variance (ANOVA) shows that knowledge and attitudes differ by gender and age, rural or urban residence, and property ownership. The respondents were divided into libertarian, dominionistic, proresource exploitation, and proconservation groups. It is clear that the historical orientation of most respondents toward agricultural and natural resource extraction strongly influenced their attitudes toward GYE management.

**Renn, O.; Webler, T.; Rakel, H.; Dienel, P.; Johnson, B. 1993. Public participation in decision making: a three step procedure. Policy Sci. 26(3):189–214.**

This article introduces a new model of public participation in political decisions. Structured in three consecutive steps, the model is based on the view that stakeholders, experts, and citizens should contribute their own particular expertise and experience to the planning effort. Stakeholders are valuable resources for eliciting concerns and developing evaluative criteria because their interests are at stake and they have already made attempts to structure and approach the issue. Experts are necessary to provide the data base and the functional relationships among options and impacts. Citizens are both the potential victims and potential benefactors of proposed planning measures; they are the best judges to evaluate the different options available on the basis of the concerns and impacts revealed through the other two groups. The three-step procedure offers a limited, but promising future for democratizing policy making in the U.S.

**Rocheleau, D. 1994. Participatory research and the race to save the planet: questions, critique,**

**and lessons from the field. Agric. Hum. Values 11(2/3):4–25.**

Participation has been widely touted as the answer to a number of problems facing sustainable development programs. This author feels that it is not enough, however, to involve rural people as workers and informants in research and planning endeavors defined by outsiders. Rocheleau suggests that a truly collaborative approach depends upon society's ability to broaden its definitions of research and participation, to accommodate a wide spectrum of land users and local knowledge, and to expand its repertoire of research methods. The article critiques facile approaches to participation, outlines a more-inclusive framework for participation, and reviews a variety of methods that address the complex realities of rural livelihoods and landscapes. The final section of the paper suggests a multi-institutional model that combines the complementary strengths of several types of organizations in participatory field research and planning.

**Rokeach, M. 1973. The nature of human values. The Free Press, New York, New York.**

This book discusses individual and social value systems from a social-psychological perspective. The most important contribution of the book is the general discussion of human values. Rokeach divides values into two categories: instrumental and terminal. Instrumental values relate to modes of conduct, while terminal values relate to desired ends. Rokeach also discusses at length measurement of values and value changes. The book reviews and discusses the link between attitude and values changes, and describes empirical data related to the change and stability of value systems.

**Ross, M. 1995. Forest management in Canada. Can. Inst. Resour. Law, Calgary, Alberta.**

In this book, Ross outlines the major issues, conflicts, and participants involved in forest sectors of the 10 provinces. It examines the policy framework of forest management in Canada, deals with the legal framework of forest management, and investigates the perspective for change. The policy community/network approach is applied. Major state and societal participants in such issues as the development of tenure rights, land-use planning, timber management planning, and the growth of environmental impacts are identified. The author argues that the existing forest-policy network remains dominated by industry and government and, for major change to occur, the participation of others who reside outside the network is required.

**Sabatier, P.; Jenkins-Smith, H. 1993. Policy change and learning. Westview Press, Boulder, Colorado.**

The authors introduce the advocacy coalition framework (ACF) as a dynamic model for understanding the process of policy change. The ACF examines policy change over a long time period (usually greater than a decade). Public participation is, in one respect, limited to the interaction of key elite policy participants. In another respect, though, the values that these elite policy participants hold also represent values of the wider society. Much of the authors' analysis is centered around a hierarchical belief system. Policies are embedded with beliefs and values. Within any policy community, there are 2–3 competing advocacy coalitions that can be identified through their core policy beliefs. These beliefs are difficult, if not impossible, to change. The authors argue that core beliefs will only change as the result of external factors such as a wholesale change in government or changes in socioeconomic conditions, and that most policy change can instead be found in the amendments of the secondary (instrumental) aspects of a policy belief. For example, the revision of a specific program would be considered a change of a secondary aspect. Changes to the secondary aspects of the dominant advocacy coalition will come about as the result of policy learning among experts in all of the coalitions, the authors conclude.

**Salazar, D.J.; Alper, D.K. 1996. Perceptions of power and the management of environmental conflict: forest politics in British Columbia. Soc. Sci. J. 33(4):381–399.**

The authors of this article use detailed interviews with 28 individuals involved in forest politics in British Columbia to examine political participants' self-perceptions of their roles in the policy process. The actions and perspectives of Aboriginal peoples, industry, government, environmentalists, and organized labor are considered. Several theories are used to

show how members of these groups perceive forest politics to operate in B.C. The authors conclude that existing mechanisms for conflict resolution will inevitably fail due to the perceptions of certain stakeholder groups. They also suggest that alternative dispute-resolution methods will not overcome the major values differences among stakeholder groups. At best, such methods will be useful in helping to adjudicate issues and decisions of a more-moderate nature.

**Samdahl, D.; Robertson, R. 1989. Social determinants of environmental concern. Environ. Behav. 21(1):57–81.**

Differential support for environmental issues has long provoked the curiosity of researchers. Sociodemographics and political ideology have been the primary focus of much research on the determinants of environmental concern. In light of recent work on environmental paradigms and advanced statistical methodologies, it would be advantageous to re-examine the tenets of this body of work. This study restates the findings of previous studies within a broader causal model, and tests that model using data from a general population survey. Analysis indicated that sociodemographic variables were ineffective in explaining any of the three types of environmental concern measured, but proregulatory liberal ideology was a strong predictor of support for environmental regulation. Further research would benefit most from exploring underlying belief structures rather than demographic characteristics of the population. These results emphasize the importance of careful specification of measures in studies of environmental concern.

**Sample, V. 1993. A framework for public participation in natural resource decision making. J. For. 91(7):22–27.**

A framework based on contingent decision-making models can provide resource managers with a useful guide for analyzing the attributes of individual decisions and structuring effective public participation. The key benefits of participatory decision making—improved decision quality and greater commitment to the decision—are especially important in the management of public resources. These elements are critical not only in reaching a decision, but also for effective implementation. Developing consensus in support of sustainable management of forest ecosystems offers the prospect of participatory decision-making that is able to focus primarily on developing the means to achieve a common vision of the forest of the future.

**Schroeder, H. 1984. Environmental perceptions ratings scales: the case for simple methods of analysis. Environ. Behav. 16(5):573–597.**

Environmental-perception researchers frequently use rating scales to measure perceptions of the environment. Using data from diverse environmental rating tasks, this study compares scale values and intergroup reliability obtained by several different scaling methods. The particular method used to combine ratings influenced neither the scale values nor the reliability of the scale; a simple mean rating produced results almost identical to more-complicated scaling methods. Schroeder also found that for a wide range of subjective rating tasks, acceptable intergroup reliability can be achieved with small groups. These results can help researchers design more cost-effective studies of environmental perception.

**Scott, D.; Willits, F. 1994. Environmental attitudes and behaviour. Environ. Behav. 26(2):239–260.**

A state-wide survey of Pennsylvanians conducted in 1990 provided data on residents' opinions about ideas contained in the new environmental paradigm (NEP) and behaviors that are protective of the environment. Although Pennsylvanians expressed support for the NEP, they were not likely to engage in activities that contributed to environmental protection. Correlation analysis revealed that support for the NEP was predictive of environmental behavior, but that the linkages were not strong. Various social characteristics were more predictive of environmentally oriented behaviors than supportive of the NEP.

**Siegelman, L.; Yanarella, E. 1986. Public information and public issues: a multivariate analysis. Soc. Sci. Q. 67:402–410.**

Data from a random telephone survey of residents of Lexington, Kentucky, were collected to test a probit multivariate model of economic and environmental knowledge. Respondents were asked to identify simple economic indicators (such as the national rate of

inflation and unemployment) and responses pertaining to environmental issues. The results of the study found that in addition to each respondent's level of education, variables such as gender, race, and political ideology determined the level of understanding of these issues.

**Sirmon, J.; Shands, W.; Liggett, C. 1993. Communities of interests and open decision making. J. For. 91(7):17–21.**

These authors argue that the solutions for increased conflict within the forest sector over different types of resource use and management-planning methods will require the interaction of all stakeholders. This mirrors one of the recommendations of a U.S. Forest Service critique of forest planning. The sharing of power between managers and stakeholders does not necessarily compromise the professional rigor of management decisions. Rather, the authors argue that there is the need for a different type of leadership that can be a catalyst to mobilize others to solve problems. Such leadership will result in open decision-making forums, which will inevitably lead to policy solutions, the authors conclude.

**Sivacek, J.; Crano, W. 1982. Vested interest as a moderator of attitude-behaviour consistency. J. Pers. Soc. Psychol. 43:210–304.**

The authors present results from two studies that examined the hypothesis that the degree to which an individual perceives an attitude as hedonically relevant affects the relationship between attitudes and behavior. In one study, respondents' willingness to work actively against the passage of a referendum that would raise the legal drinking age was found to be associated with their age, and consequently, the degree to which this change in the law would affect them. In the second study, the behaviors of students who felt strongly that they would be affected (either positively or negatively) by the imposition of a university-wide senior comprehensive examination were very consistent with their expressed attitudes toward the examination. The behavior of students who felt that the test would not affect them, however, was not strongly related to their attitude toward it. In this study, ego involvement did not moderate attitude-behavior consistency. This pattern of results emerged in both studies, even though the attitudes of subjects within the different vested-interest conditions were the same.

**Smith, D. 1994. Conflict resolution: an annotated bibliography. Univ. Winnipeg, Winnipeg, Manitoba.**

This bibliography examines the most-pertinent articles dealing with seven research topics in the area of conflict resolution. The references are listed alphabetically under the topics of comanagement, conflict resolution, consensus, ecosystem, forest management, mediation, and resource management. The bibliography is limited to journal articles published in English from 1975 to 1994. There are a total of 225 citations.

**Smith, G. 1982. Mechanisms for public participation at a normative planning level in Canada. Can. Public Policy 8(4):561–572.**

In this article, Smith identifies a hierarchy of planning levels: normative, strategic, and operational. Smith argues that public participation in Canadian planning is centered at the operational level. This is defined as the interaction of the public in determining what will be done; however, very little is understood about what ought to be done, or normative planning. As a result, no strategy has been developed to implement a growing need for normative planning. The author cites a number of wide-ranging examples of this demand, which include the Mackenzie Valley Pipeline, the Pearse Commission on Pacific Fisheries, and the St. John Human Development Project.

**Smith, V.K. 1987. Intrinsic values and benefit cost analysis. Pages 27–35 *in* G. Peterson and C. Sorg, eds. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Gen. Tech. Rep. RM-148.**

This paper reviews the literature on intrinsic and nonuse benefits as it has developed for resource and environmental applications, and proposes a consistent set of definitions for *ex ante* use and nonuse values. The conceptual framework demonstrates the inadequacy of the conventional treatment of use, option, and existence values. Option value, the difference between the option price and expected value of consumer surplus, is shown to arise from the comparison of two different conceptual frameworks for describing how individuals value

resource changes under uncertainty. The *ex ante* or planned expenditure function is defined and used to provide a taxonomy for use and nonuse values when individual decisions are made under uncertainty. The paper concludes by considering the prospects for measuring nonuse values for natural and environmental resources, and the implications for the treatment of nonuse values in the conceptual analysis that underlies the practices of benefit–cost analysis.

**Smythe, P.; Brook, R. 1980. Environmental concerns and actions: a social psychological investigation. Can. J. Behav. Sci. 12:175–186.**

A large (n = 893) and heterogeneous Canadian sample was administered a test of environmental attitudes and knowledge developed by Maloney and Ward (1973). Data were analyzed in two ways. Using Maloney, Ward and Braucht's (1975) original scoring scheme, Smythe and Brook replicate their major findings. The second analysis uses factor analytic techniques to examine the dimensionality of the original scales, and led to a rescoring of the data which reflected the factor structures discovered. The authors suggest that the new scales have some heuristic value, both in terms of increasing the understanding of the nature of attitude–behavior relationships in this area, and also in terms of their implications for social-intervention policies.

**Sorg, C.; Loomis, J. 1984. Empirical estimates of amenity forest values: a comparative review. U.S. Dep. Agric., For. Serv., Rocky Mt. For. Range Exp. Stn., Ft. Collins, Colorado. Gen. Tech. Rep. RM-107.**

Comparisons of empirical estimates of the values of wildlife, wilderness, and general recreation require that the values be based on comparable methodologies and units of measurements. This paper outlines the adjustments necessary to make such comparisons and then applies them to an extensive data base of valuation studies.

**Steel, B.; List, P.; Shindler, B. 1994. Conflicting values about federal forests: a comparison of national and Oregon publics. Soc. Nat. Resour. 7(2):137–153.**

Federal forest land in the Pacific Northwest has become the focus of a regional and national debate concerning the protection of natural environmental systems and the economic and cultural vitality of local communities. At the heart of this debate are different values about forests and human relationships to them. This study examines the degree to which the national and regional publics embrace differing values about federal forests nationally and regionally. Findings suggest strong biocentric-value orientations toward forests among both publics. It is further suggested that the value orientations of citizens are strongly related to policy preferences for federal forest lands.

**Steger, M.; Witt, S. 1990. Gender differences in environmental orientations: a comparison of publics and activists in Canada and the US. West. Polit. Q. 42:627–650.**

Survey research conducted on American and Canadian respondents over the issue of acid rain revealed that women are more likely than men to hold proenvironmental beliefs; that these differences are evident among both the general public and those individuals who have already distinguished themselves from the general public by joining environmental organizations; and that Canadians overall have higher proenvironmental attitudes than Americans. The results indicated that women hold beliefs that reflect a protective attitude toward the environment, and that they perceive higher risks from acid rain pollution. They also gave more support to the beliefs of the New Environmental Paradigm, and are more-likely to back a moratorium on activities that cause acid rain. Women also expressed higher levels of perceived policy influence and political participation than men. Men had acquired more policy-specific information on the sources of acid rain and abatement technologies than women. The gender of the individual has an effect on all of the proenvironmental measures cited in this study, such as protective orientations, perceptions of risk, support for the NEP, and support for a moratorium on acid rain causes. Strategies to improve ecosystem quality of the Great Lakes basin cannot succeed without widespread public understanding and acceptance of whatever goals the strategies are meant to achieve. The liberal democratic traditions of the U.S. and Canada make public understanding and support a prerequisite for implementing governmental policy. Reliance

on the preventative measures called for in the Great Lakes Water Quality Agreement is the direct responsibility of private corporations, municipal governments, private landowners and federal, state and provincial agencies. These measures call for direct changes in land use practices, industrial production processes, and infrastructure development. The challenge is to find effective ways of creating widespread awareness and commitment to ecosystem quality goals.

**Tanz, J.; Howard, A. 1991. Meaningful public participation in the planning and management of publicly owned forests. For. Chron. 67(2):125–130.**

The authors believe that foresters responsible for the management of public forests in Canada need a new approach for integrating public values into resource decision-making. Tanz and Howard examine public participation in the management of public forests by trying to answer three questions: Why involve citizens in resource management at all? Who can participate? How may the public participate? The authors offer the concept of forest constituencies to help decide who should be involved. The authors suggest that the public must be involved in both policy and management decisions.

**Tesser, A.; Shaffer, D. 1990. Attitudes and attitude change. Annu. Rev. Psychol. 41:479–523.**

This paper reviews attitude and attitude-change theory, including the tripartite definition of attitudes, attitudes as associative networks, and values as the vertical structure of attitudes. The quality of attitudes as predictors of behavior is discussed. The authors suggest that the theory of reasoned action continues to be the most-popular approach; however, advances have been made in the understanding of nonrational factors, dissonance, self-perception, and self-presentation approaches, which explains the effect attitude has on behavior. The third section of the paper deals with functions of attitudes and addresses the problems of operationalizing the concept, measurement, and the cognitive processes involved in attitude formation and adjustment. The authors conclude that there has been significant progress in attitude research since the mid-1980s, and numerous theoretical approaches are promising in explaining attitudes.

**Thrupp, L.; Cabarle, B.; Zazueta, A. 1994. Participatory methods in planning and political processes: linking the grassroots and policies for sustainable development. Agric. Hum. Values 11(2/3):77–84.**

The use of participatory methods has become increasingly popular in agricultural research and development and natural-resource management. Many approaches are being used at the grassroots level in order to involve local citizens and groups in projects. Many of these approaches remain peripheral and isolated from conventional development agencies and policies. Recently, links have been made between participatory approaches and wider planning and policy-making processes. These links have increased the influence of participatory-planning methods on resource-management initiatives. The paper summarizes the main lessons from these innovative participatory experiences in addressing policy issues for sustainable development.

**Ungar, S. 1994. Apples and oranges: probing the attitude-behaviour relationship for the environment. Can. Rev. Sociol. Anthropol. 31(3):288–304.**

This paper is critical of environmental sociology, which advocates that the aggregate of individual attitudes reflects overall societal values towards the environment. To understand and study environmental behavior better, Ungar argues that researchers must switch from using polling methods as the source of data to a macro-approach that focuses on collective actions. The paper reviews the linkage problems caused by the polling methodology, and argues that the environment should be conceptualized as a synthetic macro-category that focuses on collective action. The problems with Canada's Green Plan are cited as an example of the misconception of the aggregation of individual attitudes.

**Van Liere, K.; Dunlap, R. 1980. The social bases of environmental concern: a review of hypothesis, explanations, and empirical evidence. Public Opin. Q. 44:181–197.**

In this paper, Van Liere and Dunlap present an evaluation of the existing knowledge on the social bases of public concern with environmental quality. Five popular hypotheses asserting relationships among environmental

concern and eight demographic and social variables are reviewed. Particular attention is paid to the theoretical explanations offered in support of each hypothesized relationship. The results of 21 relevant studies are evaluated to determine the degree to which the empirical evidence supports the hypothesized relationships. Implications of the results of the review for future research are discussed.

**Van Liere, K.; Dunlap, R. 1981. Environmental concern: Does it make a difference how it's measured? Environ. Behav. 13:651–676.**

Past studies of environmental concern have measured the concept in many ways, often assuming that different types of measures are equivalent to each other. This study examines the degree to which different types of measures of environmental concern produce consistent results. The measures are differentiated in terms of the substantive issues reflected in their items, and the theoretical conceptualization used in developing the items. A model is developed that hypothesizes two types of consistency: consistency in the intercorrelations among environmental measures, and consistency in the correlation among the environmental measures and various sociodemographic variables. The review of existing literature and the results of a study of Washington state residents (n = 806) show little support for the assumption that all environmental concern measures are equivalent.

**Van Liere, K.; Dunlap, R. 1983. Cognitive integration of social and environmental beliefs. Sociol. Inq. 53:333–341.**

The authors of this paper examine the extent to which acceptance of dominant social beliefs and conflicting environmental beliefs by individuals helps to explain inconsistencies among environmental attitudes and behaviors. Specifically, the authors hypothesize that individuals who demonstrate consistency in their acceptance of key social and environmental beliefs will also demonstrate greater consistency in their environmental attitudes and behaviors. Data from a mail survey of Washington residents are used to examine this issue.

**Vining, J.; Ebreo, A. 1991. Are you thinking what I think you are? A study of actual and estimated goal priorities and decision preferences of resource managers, environmentalists, and the public. Soc. Nat. Resour. 4(2):177–196.**

Although public and interest-group input to resource-management policy and decisions is considered valuable and is often legally mandated, interactions between these groups and government agency officials are often marked by conflict and animosity. The authors examine two potential sources of conflict between these groups. First, they examine differences among the decision preferences and values of resource managers, members of an environmental group, and the public; and second, they examine the discrepancies between the groups' perceptions of each other's goal priorities or decision preferences and the actual responses. In general, the results provide evidence for a gulf not only between the actual responses of the three groups, but for one between actual and expected responses. This indicates that finding a balance between the concerns of public and special-interest groups and management mandates will involve not only assessing the positions of the three groups, but also actively resolving discrepancies between the expectations for others' responses and the actual responses.

**Walsh, R.G.; Johnson, D.M.; McKean, J.R. 1988. Review of outdoor recreation demand studies with nonmarket benefit estimates: 1968–1988. Colorado Waters Resour. Res. Inst., Colorado State Univ., Ft. Collins, Colorado. Tech. Rep. 54.**

This report provides an update of a previous literature review that adjusted benefit estimates for omission of the opportunity costs of travel time, sample truncation to instate residents, and use of the individual-observation approach (as opposed to the zonal approach). The time adjustment is supported by regression results, and the other adjustments are less than indicated by the coefficients. Overall, the adjustment did not change benefit estimates significantly. More-recent studies of recreation benefits require fewer adjustments for these reasons. More-recent methods used by economists that control for the various biases reduce many of the problems inherent in transferring benefits from site-to-site or activity-to-activity for policy-application purposes. These methods include adjusting for the variation in the costs of travel time, substitution, site quality, and the functional form of the regression model in travel-cost applications.

Contingent-valuation problems include adjusting for variations in the method of payment; in the functional form used to analyze the dichotomous choice questions; and in the information on resource quality, uncertainty, and substitution possibilities. In both TCM and CVM approaches, the linkage between theory and econometric estimation is being improved by the use of discrete-choice and qualitative-response models with maximum-likelihood statistical techniques. The authors recommend that future research should translate findings directly to policy issues. Most of the studies reviewed in the report were designed to answer a specific question at a specific recreation site or set of sites. As a result, certain research projects have claimed a substantial amount of public support even though they promise little change in future recreation opportunities. The challenge comes in designing dual-purpose studies with a direct use in policy application at the study sites, and an indirect use to answer policy questions at other times and places.

**Watson, A.; Niccolucci, M.; Williams, D. 1993. Hikers and recreational stock users: predicting and managing recreation conflicts in three wildernesses. U.S. Dep. Agric., For. Serv., Intermt. Res. Stn., Ogden, Utah. Res. Pap. INT-468.**

The authors of this paper examine conflict between two types of recreational users, hikers and recreational livestock users. Hikers were hypothesized to have negative attitudes toward livestock users. Three case studies were conducted in national parks in California and Indiana.

**Wilson, J. 1990. Wilderness politics in B.C.: the business dominated state and the containment of environmentalism. *In* W. Coleman and G. Skogstad, eds. Policy communities and public policy in Canada. Univ. Toronto Press, Toronto, Ontario.**

In this chapter, Wilson found that the British Columbia forest industry and the provincial government remain openly hostile to any suggestion by the environmental movement that a small fraction of uncontested industry-controlled land be set aside as a wilderness reserve. The key government participant, the B.C. Ministry of Forests, has been challenged by various environmental groups on this issue. As a result, the policy network has gone from being a close relationship between industry and government, to a "contested" network in which some aspects of forest-management practices have been changed. Wilson concedes that any future changes will not lead to normative shifts resulting in significant policy changes.

**Wondolleck, J. 1988. Public lands conflict and resolution: managing national forest disputes. Plenum, New York, New York.**

Wondolleck argues that public-lands conflict results from inadequate decision-making processes. The main reason is that the public-land management paradigm that is premised on rational, scientifically based resource conservation and use is not able to accommodate more-recent and highly judgmental preservation and noncommercial interests. The challenge is to resolve the inevitable differences between the many affected groups in order to overcome the current impasse. Wondolleck examines three contrasting issues areas (oil and gas leasing and permitting, timber harvesting and management, and national forest planning) that involve the Bureau of Land Management (BLM) and the U.S. Forest Service. The book examines the nature of the conflict; the background of forest management; the problems of forest management; and possible solutions.

**Wurther, G. 1991. Paradigms and paradoxes, resource managers and eco-centrists. For. Watch 11(6):8–11.**

Wurther outlines the differences between forest managers and ecologists' paradigms. The author concludes that only management schemes that are based on ecological parameters will be economically sustainable over the long run. Managers face the difficult challenge of finding a way to use resources without systematically destroying the ecological processes that maintain those resources. In order to do this, the author believes that there must be change in the entire set of assumptions and goals that drive current land management.

**Yaffee, S.L. 1994. The wisdom of the spotted owl: policy lessons for a new century. Island Press, Washington, D.C.**

The book discusses the well-known spotted owl controversy between environmentalists and timber interests. There has been much attention surrounding the 1989 court injunction that stopped timber sale programs of the U.S.

Forest Service in Oregon, and the subsequent attempts to reach an amicable solution. Yaffee argues that much of the impasse originates in a long history of the policy process dominated by a technically based, timber-oriented "can-do" U.S. Forest Service that did not consider the growing environmental values within American society. The U.S. Forest Service's inability or unwillingness to incorporate public environmental concerns in its decision-making led to extreme polarization of interest groups. The controversy has deeper implications for the effectiveness of the entire decision-making process. In situations where there is no clear consensus for a dominant value or use, and where there is an absence of leadership from key governmental agencies, conflict will result. Yaffee suggests gradual change through a series of small decisions that balance the roles of scientific evidence, public participation, and the retooling of the lead environmental agencies in the policy process will ultimately overcome this policy impasse.

**Young, R. 1991. The economic significance of environmental resources: a review of the evidence. Rev. Mark. Agric. Econ. 59(3):229–254.**

The products and services of many environmental resources do not enter commercial markets and remain unpriced. The absence of market values presents a major difficulty for environmental projects competing for ever-tightening budgets. In response to the need for assessing costs and benefits, a number of methods have been devised and applied to generate estimates of the value of unpriced resources. This paper, which pays particular attention to the contingent-valuation method, briefly reviews the approaches used for generating value estimates for unpriced environmental resources. Estimates of value for environmental products and services are presented for both the U.S. and Australia. These estimates clearly demonstrate that a wide range of unpriced environmental resources have significant economic value to the community. The paper concludes with a discussion of the implications for project development, funding, and policy in Australia.